

COKE REFRESHES RETAILERS

Coca-Cola uses IT to help retailers slice and dice frequent-shopper data to boost sales of everything in their stores. Page 70

QUICKSTUDY

How cable modems deliver higher-speed Web access. Page 89



WISH LIST FOR FEDS

As the vendors leave Washington, columnist Frank Hayes tells the feds what IT really needs. Page 114

COMPUTERWORLD

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MICROSOFT REACTS TO SERVICE PLEAS

Redmond to kick off three-year, five-stage plan to boost enterprise support

BY SHARON GAUDIN

Though Microsoft Corp.'s customer service has improved in the past year, corporate users say it remains a big problem — so much so that some say they don't invest more in the company's products because they're afraid to.

Message received.

As part of an ongoing effort to upgrade customer service and appeal more to enterprise users, Microsoft is unleashing a three-year, five-stage program, according to Kevin Johnson, Microsoft's vice president of product support services. He said the goal is to "reinvent" the way Microsoft com-

Customer Care

Latest moves by Microsoft to boost service and support:

TRAINING engineers differently and adding mentors and internships

MATCHING users with engineers who are skilled in the users' problem area

SENDING users back to the same engineer group, which will know the company's history

ADDING 1,500 support engineers worldwide

SOURCE: MICROSOFT CORP.

municates with its customers, trains its engineers and responds to problems.

"We have the road map, and we're reinventing support," Johnson said. "If you look at us in three years, you'll be amazed."

And that's just what at least one information technology engineer is hoping for.

"We're not getting the support we need from Microsoft," said Tony Steffe, senior IT engineer at \$3 billion Boise Cascade Office Products Inc. in Itasca, Ill. "We're rolling out NT servers, and we'd like to roll out more — but it's my butt on the line... How much support we get affects how much we can buy in."

Microsoft, page 113



LEE WIND, an information broker in New York, is lobbying against privacy legislation that would outlaw "pretext calling." He calls it a necessary technique for tracking down hidden financial assets for clients

FINANCE GIANT BANKS ON BANDWIDTH

HSBC gains global access to all apps

BY BOB WALLACE

International financial services giant HSBC Holdings PLC is breaking the bandwidth barriers that have long kept it from supporting new business applications worldwide by junking its 5,000-office, 79-country data network.

HSBC is banking that the data network's replacement will provide its far-flung banks and service companies, includ-

ing several recent acquisitions, with a single, bandwidth-rich network. HSBC is among the top five financial services firms in the world, with worldwide assets of \$500 billion, and its new undertaking will give it one of the globe's largest frame-relay networks, according to experts. The project will boost bandwidth from the current network's range of 9.6K to 19.2K bit/sec. to initial rates of 64K to 128K bit/sec., with the ability to go higher.

As part of a mammoth, five-

Bank, page 16

UNDERLYING TECH KEY TO E-SUCCESS

eBay debacle makes reliability a hot issue

BY JAIKUMAR VIJAYAN

When it comes to the Web, there's no such thing as investing too much in service reliability.

Just ask online auctioneer eBay Inc., which last week was sifting through the rubble of a public relations disaster caused by a 22-hour disruption of crucial services June 10.

The outage — which was only the latest in a series of high-profile service disruptions at eBay, totaling more than 53 hours this year alone — will cost the company as much as \$5 million, including refunds

E-Success, page 113

INFO UNDERGROUND

YOU'VE BUILT a great, all-in-one customer information system. Guess what: End users unwittingly give private customer data from

the system to so-called information brokers. As Kim S. Nash reports, the brokers use a trick known as "pretext calling" to extract key financial and medical info nuggets for sale in the underground market. Story on page 24.

PRIVACY
ISSUES



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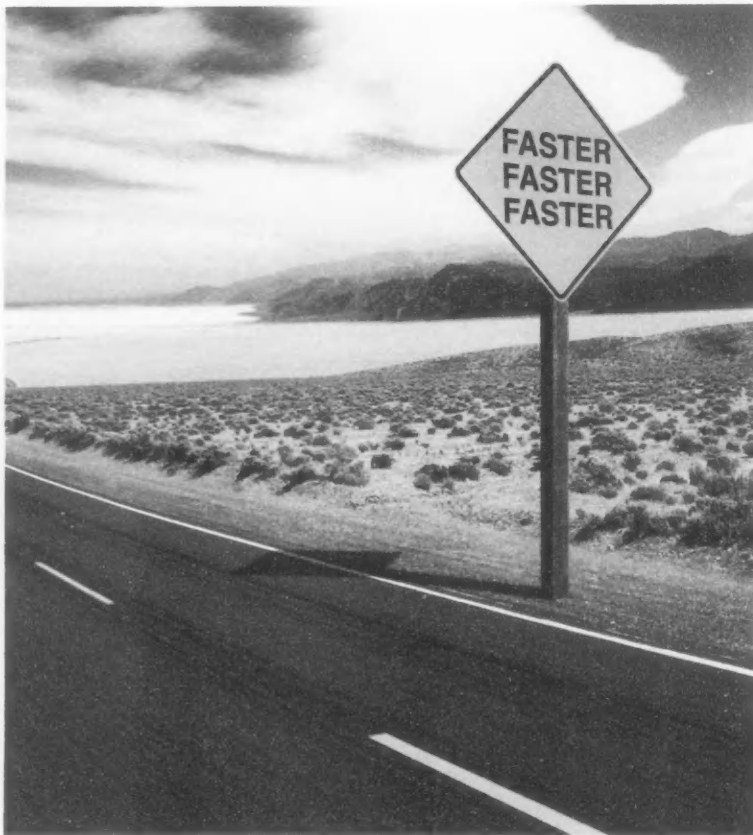
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PETER DE JAGER

has been predicting Y2K doom and gloom since 1993. Now he's made a joke of it. Page 47



DIGITAL DELIVERY

Vincent Pluvigne's start-up Preview Systems gives vendors and IT managers the routes to electronic software distribution. Page 88



HOT HOT HOT

Get the buzz on the hottest technical and business skills from six high-level IT executives. Page 63

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THE NOTION
THAT YOU CAN
HAVE DARK
WINDOWS ON
WEEKENDS HAS
GONE AWAY
ENTIRELY.

FRED MATTESON, CHARLES SCHWAB, ON
HOW OUTAGES LIKE THE RECENT ONE
AT EBAY CAN DISILLUSION CUSTOMERS.
SEE PAGE 1.

AT DEADLINE

40 Fed Programs Not Y2K-ready

U.S. Rep. Stephen Horn's (R-Calif.) federal year 2000 watchdog committee released a report that identified more than 40 federal programs that may not finish their Y2K work in time. Programs such as child nutrition, food stamps, child-support enforcement and Medicaid won't complete their Y2K repairs until December and so may not have time for testing, the report said.

E-Mail Up 20%

U.S. workers are receiving 6% more messages this year than last, with overall e-mail up almost 20%, according to a survey to be published today. The average American worker receives 113 messages per day (21 of them e-mail) and sends 87.8 (17 of them e-mail), according to the study commissioned by fax and document company Pitney Bowes Inc. in Stamford, Conn.

IBM Joins Effort For Financial XML

IBM has joined PricewaterhouseCoopers and J. P. Morgan & Co. in supporting an Internet-based language for electronic dealing and financial derivatives information, the companies said. Financial Products Markup Language is based on Extensible Markup Language.

Windows 2000 Release Nears

Microsoft Corp. last week said it will ship an update to the third beta of its Windows 2000 operating system sometime between the end of June and the beginning of July.

VPN Service Launches

Bell Atlantic Corp. last week announced Managed VPN, a virtual private network service that remote and mobile users can access nationwide. A subsidiary provides, maintains and monitors the equipment. The carrier also announced a LAN interconnection service in New York. Pricing wasn't announced for either service.

Y2K Stalls Lotus Notes R5

System freezes prompt companies to delay installations of Domino server upgrade

BY DOMINIQUE DECKMANN

LOTUS DEVELOPMENT Corp. will open its DevCon99 developers conference today with plans to showcase capabilities in Notes/Domino Release 5, but several large users said they won't install the upgrade for up to a year because of year 2000 freezes at their companies.

Lotus Notes/Domino R5 finally reached stores in April — months after the company launched a high-profile media campaign for the product. But for many users, its arrival was too late to get the product installed this year.

For example, SmithKline Beecham Corp.'s deployment of R5 will be delayed until March because of the company's freeze on installing new products before Jan. 1, said Bill Wood, director of application technologies at the King of Prussia, Pa.-based pharmaceuticals company. But Wood said he hopes to start a Notes/Domino R5 pilot program by September because he sees many benefits to the upgrade, including support for Java and the use of HTML, the Web language, as a native protocol.

Aaron Wiltz, technical analyst at McDonald's Corp. in Oak Brook, Ill., said the new administrative tools in R5 will make his life a lot easier. But that won't happen until McDonald's Y2K freeze lifts, which will start in October.

"Some [companies] are upgrading to R5) right now be-

cause they need the Web performance" improvement, Wiltz said. But many sites that use Notes mainly for messaging and groupware will wait out Y2K, he said.

Lotus is downplaying the problem, claiming that it has seen no signs of Y2K affecting its revenue or sales. Lotus wouldn't disclose sales figures but claimed that 85,000 copies

of a free, three-month trial version have been downloaded from the Internet since March 31. Overall, there were 29.6 million Notes/Domino users at the end of last year, according to International Data Corp. (IDC) in Framingham, Mass.

"The vast majority of our customers are going to continue to deploy" Notes R5, said Steve Lewis, a senior director at Lotus.

Year 2000 aside, Mark Levitt, an analyst at IDC, said companies might not be in a rush to upgrade, anyway.

"The [Notes] 4.5 and 4.6 products are great products, and that, together with Y2K, is giving people reason to wait," he said.

Lockheed Martin Idaho Technologies, a subsidiary of Lockheed Martin Corp., is still hoping to complete its R5 migration of 6,200 users before an expected Y2K freeze in the fall — that is, if the still-missing Hewlett-Packard Co. HP/UX version of R5 ships in time, said Tom Smith, a project manager at the Boise, Idaho-based company. ■

Home Depot Testing Linux For Mushrooming PC Volume

Remote management system 'flying blind' on Windows 95

BY DAVID ORENSTEIN
SAN FRANCISCO

The Home Depot Inc.'s growth is so rapid, the company may have to turn to the Linux operating system to remotely manage its mushrooming population of in-store PCs.

Home Depot, which already operates more than 800 stores, is opening a new store every two days — six stores opened June 17 alone. The chain expects to operate 1,600 stores by 2002 and have 90,000 remote PCs and PC-based cash registers to manage by then, said IS Vice President Mike Anderson. The company is dreading what it would cost to support

that many computers with its current infrastructure.

Using Linux to run those PCs could offer a key advantage that other operating systems don't, Anderson said. Home Depot is pilot-testing the idea this summer using Re-

search Triangle Park, N.C.-based Red Hat Software Inc.'s distribution of Linux.

Here's why: Linux would allow support engineers at the company's Atlanta headquarters to manage the basic settings of each machine from within a Web browser. New files or updates could be dispensed from the Hewlett-Packard Co. or IBM Unix server in each store. Be-

cause Linux's kernel loads dynamically, Anderson added, a new machine could be shipped to a store, linked to the network and configured on the fly once it boots.

Currently, the company's in-store PCs run Windows 95, said application development manager Kathy Tadlock. "With Windows, we're flying blind," because [it] can't fully manage the remote PCs, she said.

The company uses Symantec Corp.'s PCAnywhere to access each machine remotely, but if a computer's files become corrupted or are missing, they can't be sent over the wide-area network. Instead, the company must ship a new hard drive to the store.

Anderson said Linux, or possibly Microsoft Corp.'s Windows CE, would allow the company to run a leaner, more manageable operating system on the clients. But an argument for choosing Linux over Windows CE is that the company's store client applications are written in Java, he said.

The extent of Java support for Windows CE is unclear. Meanwhile, IBM, a major Java vendor for Home Depot, is beginning to push Java on Linux. Windows CE, often etched into the ROM chips of devices that run it, isn't as easily modified and managed as Linux, said Dan Kusnetzky, an ana-

lyst at International Data Corp. in Framingham, Mass.

Linux is also virtually free to license, although it will cost money to buy support from Red Hat and to hire internal Linux experts.

Although Home Depot could have eased its Windows remote management problems by putting a Windows NT server in each store, that move would have been very costly, Anderson said. ■

JUST THE FACTS

Home Depot Inc.

- One of the nation's 10 largest retailers
- 1998 sales: \$30.2 billion
- 1998 net income: \$1.6 billion
- What average consumer spends per trip: \$45.05
- Headquarters: Atlanta
- Employees: 181,500
- Stores: 805
- Areas of operation: U.S., Canada, Puerto Rico, Chile

Correction

A May 24 Business feature ("Computersworld's 2nd Annual Consultants Salary Survey: The Black Hole of Payroll," p. 50) misprinted Interim Technology. An accompanying chart incorrectly listed some compensation figures in the table "Salaries for IT Consultants." Readers can view a corrected chart at www.computerworld.com/home/features/rsd/sal990524/survey_charts. Corrected figures

are: Salary for a midlevel research associate is \$43,600. Total compensation for a research associate with low-level experience is \$35,400. Total compensation for a senior-level consultant is \$160,000. Total compensation for a junior partner with high-level experience is \$208,000. Total compensation for a senior partner with midlevel experience is \$192,000. Total compensation for a senior partner with high-level experience is \$390,000.

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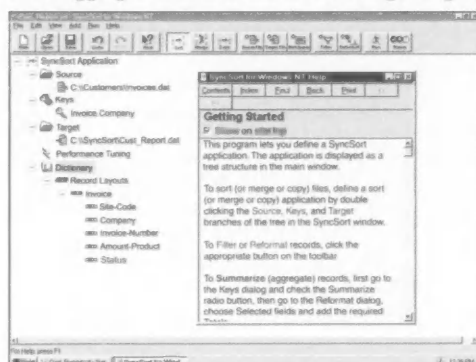
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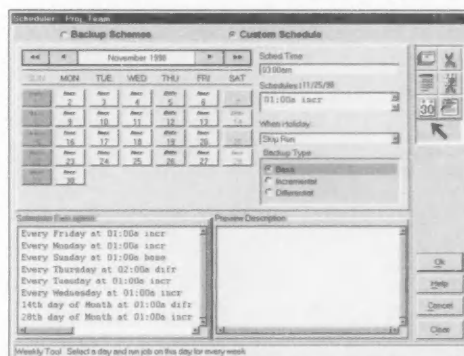


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IT Execs to Lawmakers: Avoid Heavy Policy Hand

Gates, others ask Washington to lift trade barriers, fund research

BY STACY COLLETT
AND PATRICK THIBODEAU
WASHINGTON

AT THE Joint Economic Committee High Tech Summit held here last week, industry heavyweights gave congressional leaders their two cents on what role, if any, government should play in the high-tech industry.

Most of the technology executives on hand encouraged Congress to avoid policy mandates, instead urging lawmakers to lift trade barriers, fund research and, in some cases, crack down on monopolistic behavior.

Microsoft Corp. Chairman and CEO Bill Gates, who drew the largest crowd at the three-day event, also was the subject of laughter when he was asked by Sen. Charles Robb (D-Va.) to define the appropriate role of government in enforcing U.S. antitrust law. "You don't have to refer to any specific litigation," Robb said.

Gates dismissed rumors that his company is seeking an exemption to antitrust law for the technology industry. "The laws as they are currently written are fine," he said in response to one question.

Tread Lightly

"The success of this industry owes a lot to the light hand of government," Gates said. "People can take incredible risk, and if they are successful, they can have incredible rewards." He predicted that software will be the country's largest manufacturing industry by next year — an extraordinary achievement for an industry that's less than 30 years old.

Getting back to how the government can help, Gates said it could do more on immigration

policy to attract more skilled workers and provide both research-and-development tax credits and more encryption export flexibility.

Jeffrey Papows, president and CEO of Lotus Development Corp. in Cambridge, Mass., said 65% of Lotus' revenue comes from outside the U.S., but "outdated export restrictions increasingly cripple our industry's ability to supply secure, American-made systems to foreign companies and are letting competitors abroad displace U.S. software products."

Gates and Papows can relax a little. Legislation was introduced into Congress this year to liberalize export controls on encryption. The House bill would let companies sell any encryption do-

mestically and provide some export control relief. The Senate version would prohibit domestic controls but not provide export relief.

Network Associates Inc. Chairman William Larson said U.S. security software firms are also being threatened by

"misguided U.S. policies."

Network Associates had a deal with Chrysler Corp. to provide desktop encryption products before the automaker merged with Daimler-Benz AG.

U.S. law allows more liberal exports to foreign offices of U.S.-owned companies, but not to foreign-owned companies. DaimlerChrysler AG is now looking at a German company. "This is a seven-figure deal that

could be lost," Larson said.

On the Internet front, Eric Schmidt, CEO of Novell Inc., acknowledged that the trail of personal data left by millions of Web users is largely unmanaged, and online privacy is a problem. But he urged members of Congress to let the technology industry come up with its own plan.

"The last thing Congress should do is rush to judgment about the need to regulate this new [Internet] medium," he said. "For now, government's role should be to encourage private-sector solutions, investigate and prosecute deceptive business practices and monitor privacy abuses to determine the actual harm to consumers." ■



MICROSOFT CEO
Bill Gates: "Incredible risks, rewards"

Witness Undermines Microsoft Rebuttal

AOL exec denies plan to switch browsers

BY PATRICK THIBODEAU
WASHINGTON

When America Online Inc. executive David Colburn took the witness stand last week at the Microsoft Corp. antitrust trial here, Microsoft hoped for a brilliant, Perry Mason-like confrontation.

It didn't happen.

Microsoft wanted to show that AOL planned to dump Internet Explorer in favor of the browser made by newly acquired Netscape Communications Corp. AOL's goal, Microsoft officials said, was to help the government's case.

If AOL switched browsers, Microsoft charged, Netscape's

market share would receive a big boost, undermining a key part of the government's case: that Microsoft crushed Netscape's Navigator by giving away its own browser.

But Microsoft didn't prove its point. Colburn, a former government witness called as a hostile witness by Microsoft, was unyielding in his view that AOL needed Internet Explorer. The evidence was inconclusive; Judge Thomas Penfield Jackson looked like he was ready to fall asleep.

AOL clearly considered the possibility of switching to Netscape. In a September 1998 memorandum, AOL CEO Steve Case said such a switch would push Netscape's browser share from about half the market to more than two-thirds.

But AOL President Bob Pittman, responding to Case's memo, wrote that Microsoft "is too strong to throw them out of the tent — they can hurt us if they think they have no other option." AOL agreed last January to use Internet Explorer for two more years.

Colburn said its agreement with Microsoft ensures that AOL is listed in the Windows Start Menu, which is important for attracting new customers.

After Colburn and Microsoft chief trial attorney John Warden made their main points, Jackson told Warden, "I confess, I'm not sure where you're going here," according to a court transcript. ■

Wintel Monopoly Thrives; Customer Confidence Won't

BY STACY COLLETT
NEW YORK

Unless a court makes a ruling that curbs their behavior, Microsoft Corp. and Intel Corp. will continue to dominate the software and chip markets for years to come, a panel of attorneys said in New York last week. But the companies' arrogance and cutthroat tactics have forever changed their image in the eyes of end users, the group claimed.

The panelists, including representatives of the Federal Trade Commission and Microsoft and several antitrust attorneys, discussed what new, unwritten rules are being created for dominant technology firms.

The FTC was prepared to concede that Intel had a "legal

monopoly" based on the chip maker's skill, foresight and industry knowledge — had the antitrust case gone to trial, said FTC lead counsel Richard Parker. But Intel had also become entrenched in the market with chip and computer electronics makers that develop complementary products.

But Is It Illegal?

"The question was whether they are doing something illegal to enforce that [monopoly]," Parker said.

The suit alleged that Intel withheld intellectual property from Digital Equipment Corp., Compaq Computer Corp. and Intergraph Corp. after the three companies had either sued or threatened to sue Intel

for patent infringements.

But the case was settled in March, one day before the trial was to begin. As part of the settlement, equipment makers that resisted cross-licensing agreements with Intel must still receive the chip technology information.

"The Intel case is inconclusive. It left all the interesting questions unaddressed," said Charles Rule, a legal consultant for Microsoft. A ruling in the software company's own antitrust trial may answer the questions of whether Microsoft does suppress competition and if antitrust laws will be expanded to determine which standards of conduct in the technology industry warrant legal action.

As for his client, Rule argued that Microsoft's aggressive behavior is simply misunderstood. "They're concerned if they let up, [another company] will come along and displace them," he said. ■

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BRIEFS

Bank Halts Data Sales

BankAmerica Corp. in Charlotte, N.C., said it would halt the sale of all customer data to outside companies. The move comes after Minneapolis-based U.S. Bancorp was accused by the Minnesota attorney general's office of illegally selling customer data to telemarketers (see related story, page 45).

CERT Issues Server Security Hole Alert

The Computer Emergency Response Team (CERT) at Carnegie Mellon University in Pittsburgh last week issued an advisory of a security hole in Microsoft Corp. Internet Information Server 4.0 that allows intruders to embed and execute application code and crash servers. Microsoft posted a work-around on its Web site and said it's working on a patch.

IBM Ships Tiny Drive

IBM said it's shipping the world's smallest disk drive - designed for handheld devices, notebook computers and digital cameras - to device makers. It weighs 16 grams, measures 1.68 by 1.43 by 0.19 in. and can hold up to 340M bytes of data. It will cost \$499 when available to consumers in the fall.

Short Takes

A HOUSE SUBCOMMITTEE last week unanimously approved a bill to provide expert relief for encryption products. The measure now goes to the Commerce Committee. . . . MICROSOFT has an area on its Web site that "encourages" visitors to speak their mind on the government's antitrust case. It's just a way for end users to share their opinions, a spokesman said, adding, "No way are we telling what users should write to Congress." . . . At its DevCon99 conference this week, LOTUS DEVELOPMENT CORP. will highlight the Linux version of Domino with a keynote address from Linux creator Linus Torvalds. . . . PACK-ARD BELL NEC INC. in Sacramento, Calif., unveiled the latest in consumer-friendly PCs with its \$2,499, all-in-one Z1, which squeezes a 15-in. flat-panel display, a Pentium III processor, an 8.40-byte hard drive and more into a 10-sq.-in. footprint.

FAA: Don't Be Fooled By Airlines' Y2K Claims

Carriers say year 2000 tests disrupt service

BY STEWART DECK

NEXT JANUARY, the year 2000 bug will get blamed for plenty of slowdowns and equipment failures, but some U.S. airlines are already blaming Y2K systems testing for flight delays.

Don't believe it. "I have no idea why airlines would say that. It's completely false," said Paul Takemoto, a spokesman for the Federal Aviation Administration. "All of our [Y2K] systems testing was completed last March."

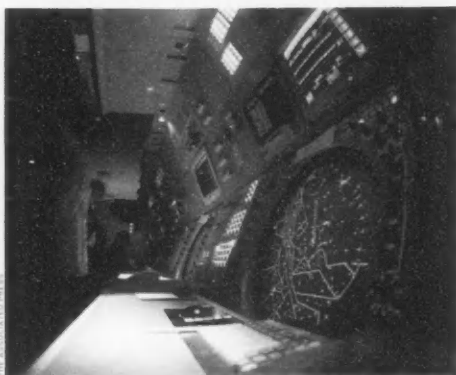
Nonetheless, at least two airlines have told fliers that Y2K testing delayed their flights.

Last Monday, American Airlines gate agents in Chicago told passengers headed to Providence that nationwide ground stoppages were being caused by Y2K testing. But Elizabeth Cory, the FAA's deputy of public affairs for the Great Lakes region, said,

"That's not true. It appears that we have some ground agents giving out inaccurate information. There is no Y2K testing

nient answer to give harried passengers. "Y2K testing can be an easy answer to give for delays when they really don't know," Hotard said. "We need to do a better job of giving accurate information to agents."

Several FAA insiders tell of



AN APRIL Y2K test at Denver International Airport was called a success

taking place."

John Hotard, a spokesman for American, said gate agents often look for a quick, con-

vey's flight last month on US Airways that was ostensibly held up by Y2K air-traffic con-

trol systems testing. Garvey called her control center to check the excuse and was told it was a fabrication. Chagrined US Airways Group Inc. officials have since acknowledged the importance of being accurate with customers.

One air traffic official conceded that there have been more flight delays recently but said they are attributable to systems upgrades, not Y2K testing. Ken Kluge, an air traffic controller and the safety representative for the National Air Traffic Controllers Association in the Great Lakes Region, said the FAA is replacing the 1970s-vintage workstations in each of the 20 national Air Route Traffic Control Centers with new radar tracking equipment and color monitors [CW, Feb. 1].

Recent installations in Cleveland, Chicago and New York have required some restrictions on air traffic so the controllers could become comfortable working on the new consoles. That has slowed down air traffic, he said.

Michael Motta, president of the Seattle branch of the National Air Traffic Controllers Association, said airlines are using Y2K to deflect blame from their own problems. ■

Reporters Patrick Thibodeau and Kathleen Ohlson contributed to this story.

Platinum Users Wary of Acquisition Fallout

CA vows to keep many tools in play

BY SAM LAIS
NEW YORK

The biggest software company acquisition ever - totaling \$3.5 billion - was completed last week. Now, corporate users said they are eager to see which Platinum Technology Inc. products will survive or be integrated into those of new owner Computer Associates International Inc.

What they will get isn't one forecast, but many. In buying Platinum Technology, CA picked up a highly polished set of tools, said industry analyst Jonathan Eunice at consultancy Illuminata Inc. in Nashua, N.H. CA has already laid plans to combine and capitalize on them.

CA will continue to support and develop most Platinum tools for two years and will retain more than 90% of Platinum's software developers, said CA President Sanjay Kumar. After that, "we'll let the customers tell us which ones to continue," he said.

Only Platinum's software-distribution tools will get the ax, said Yogesh Gupta, CA senior vice president for project strategy. Platinum's AutoXfer isn't technologically robust and will be replaced by CA's ShipIT, Gupta said. "We'll work with customers to upgrade it," he added.

The first melding of CA and Platinum products will come via an e-commerce product that combines Platinum's data warehousing and mining tools with CA's Neugent neural network technology. It will help users zero in on potential e-com-

JUST THE FACTS Platinum's Fate

- Support and development of most Platinum products will continue for at least two years
- After that, products will either be stand-alone, integrated into existing CA products or combined with CA products to create new products
- The road map for all CA products will be announced at the CA World conference next month; customers can also find out about specific Platinum products by sending e-mail to platinum.clients@cai.com

merce buyers, said CA Chairman and CEO Charles B. Wang.

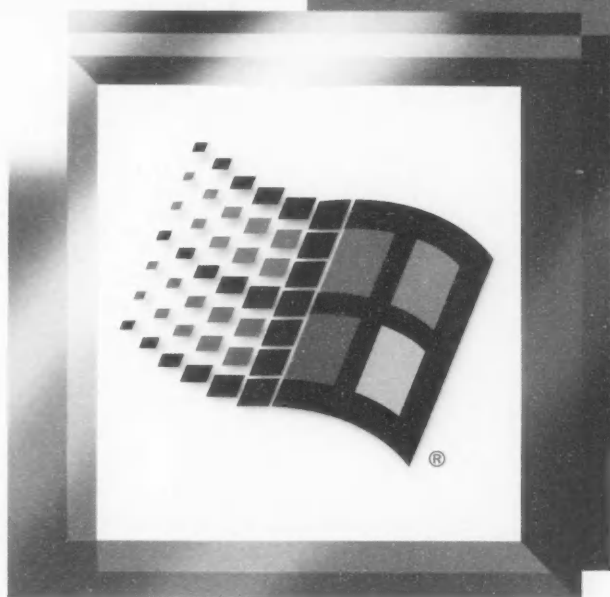
Many users have been trying to wed tools from the two companies themselves. "We wanted to integrate Platinum's DB-Vision more closely into Uni-center TNG, but there were missing pieces," said Vaughn

Bradley, enterprise project manager at Baltimore Gas & Electric.

Kumar said beta versions of blended products will debut at CA's annual conference next month. For example, Platinum's Advantage application development software will be combined with CA's Jasmine TND. Platinum and CA security software will also be combined.

"We see [the acquisition] as getting the best of both worlds," said George Kurtz, senior director of systems architecture at Yellow Services, the technical services arm of Yellow Corp. in Overland Park, Kan.

Mike Skiles, an information technology project leader at Eli Lilly & Co. in Indianapolis, said he worried that Platinum's Process Continuum project-management tool will be discontinued. He can rest easy because CA plans "to aggressively pursue its development and marketing," said spokeswoman Claudine Martini. ■



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Corporate Data Ravaged As Worm Spreads

BY ANN HARRISON

The cleverly designed Explorer.Zip worm, which many companies encountered through

infected e-mail attachments, continued to destroy data last week by infecting PCs through shared files on networks.

Companies most affected by file-sharing infections were those that scanned for and killed viruses on their desk-

tops, e-mail systems, file servers or Internet gateways but didn't install protective software on all those systems.

"That's a key mistake," said Wes Wasson, director of security product marketing at Net-

work Associates Inc. in Santa Clara, Calif. "Some companies looked for a quick fix and stopped at the Internet gateway." Wasson estimated that millions of PC users around the world were affected by the worm, either from damaged files or from lost productivity as companies shut down mail servers and entire networks.

He said the worm also overwrote backup files with zero-byte files that effectively erased the data. "Those who were damaged lost it all," Wasson said.

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Those who were damaged lost it all.

WES WASSON
NETWORK ASSOCIATES

The worm even eluded antivirus software vendor Trend Micro Inc. in Cupertino, Calif. The company received the worm in a document file and contained it immediately. But the worm passed through a shared-file system to destroy files on another PC. The worm is "much more pernicious than what was originally thought," said company spokeswoman Susan Orbuch.

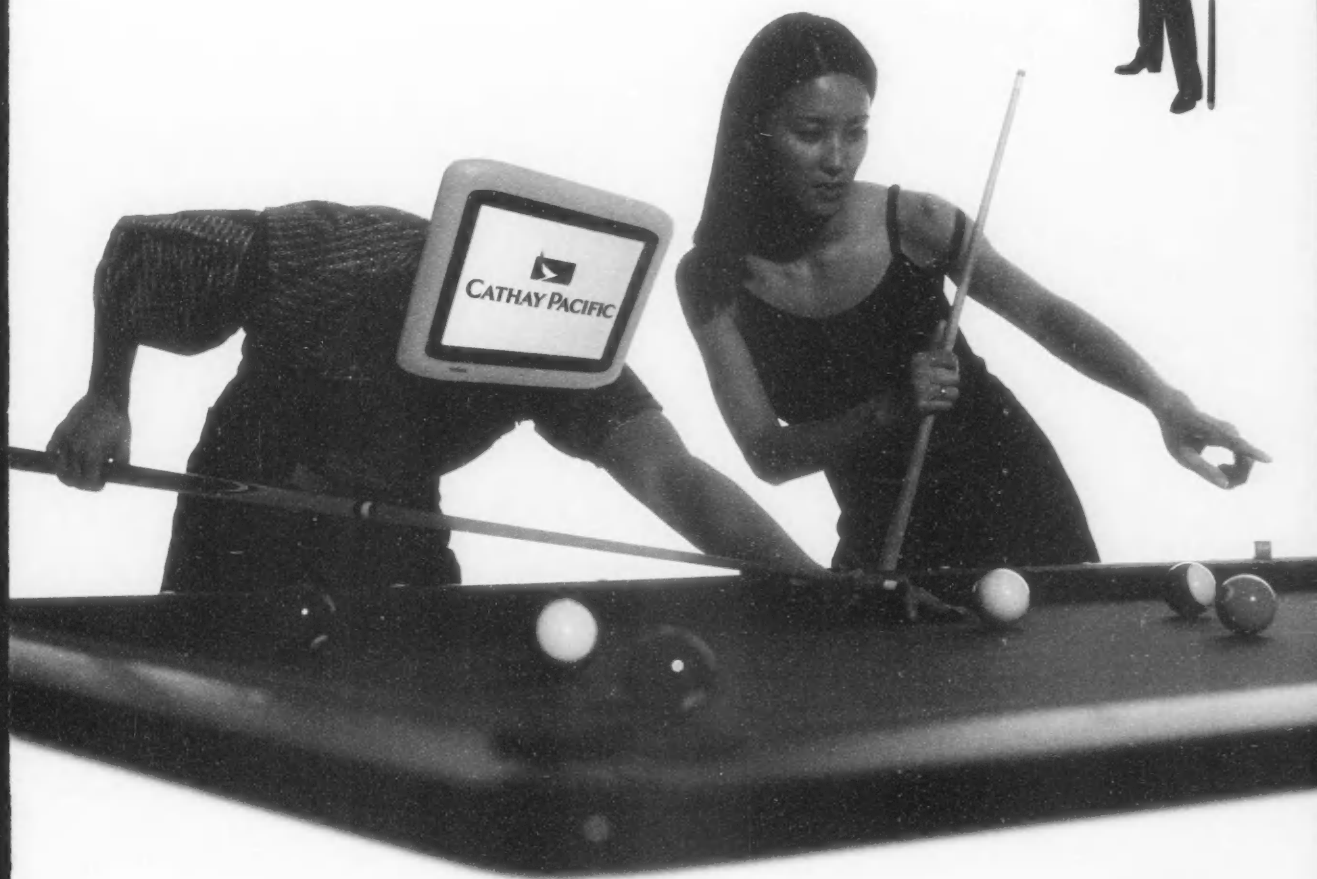
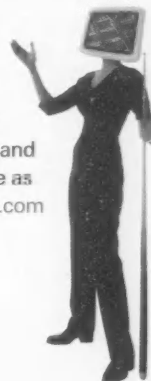
Quinn Peyton, a technical staff member at the Computer Emergency Response Team in Pittsburgh, said shared-file systems are most vulnerable when they grant users high levels of access to their colleagues' PC files.

AT&T Corp.'s operational headquarters in Basking Ridge, N.J., avoided infection from file sharing by deploying antivirus software in all company systems and alerting PC users. "[The information technology team] phrased things in a way that even the most nontechnical person could understand," said spokeswoman Karyn Vaughn-Fritz.

The FBI and worm sleuths continue to hunt for the worm's author. But unlike the writer of the Melissa virus, who was tracked after he posted the virus on a Usenet newsgroup, the worm author appears to have been more cautious. ■

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Java Users in No Rush To Upgrade

Many see no urgency to implement newest runtime environment

BY CAROL SLIWA
AND DAVID ORENSTEIN

MANY corporate developers at last week's JavaOne conference said they still haven't switched to the Java 2 Platform that Sun Microsystems Inc. released with much fanfare at its last developer show in December.

Formerly known as Java Development Kit (JDK) 1.2, the Java 2 Platform (essentially the runtime engine and class libraries needed to make Java work in PCs, workstations and lighter server environments) promised better speed and security as well as graphical user interface (GUI) and printer model improvements.

Corporate users with urgent needs for those features tended to be the ones that made the switch early, said Tim Sloane, an analyst at Aberdeen Group Inc. in Boston. But he said he senses that more users "had their applications already deployed, and they're not in a large rush to move over."

"Why take the risk if everything is stable right now?" said Kathy Tadlock, application development manager at Atlanta-based The Home Depot Inc. The company is a heavy Java user and plans to upgrade soon, but it still uses JDK 1.1.8. That's because JDK 1.2 — renamed Java 2 Platform in December and anointed last week as Java 2 Platform, Standard Edition — didn't offer features that necessitated an immediate switch, Tadlock said.

"Every time you do that, you have to test the whole application. That's a major thing to do," said R. Scott Tapper, an Internet development technical adviser at Federal Express Corp. in Collierville, Tenn. His group's intranet application has 3,000 users.

Two officials at Ernst & Young LLP, which has con-

sulted on more than two dozen Java applications for major companies, could recall only a handful of JDK 1.2 implementations. Some are new applications that rely on products that support 1.2. Others needed the

Swing GUI components. "We had to have a business case for switching," said Randy Potter, a senior manager based in Irving, Texas.

Visa International Inc. in San Francisco jumped at the

chance to implement the more granular security management capabilities that JDK 1.2 offered. The new features freed programmers from having to write application-specific security mechanisms at the code level, said Thomas Geer, a Visa software engineer.

Visa is benefiting from the new security model, which has boosted Visa's I/O performance. But Geer said he wishes he had waited for Sun's Java 2 enterprise technology before the swap because he thinks he could have condensed his conversion time from six months to one and a half months. ■

Upstart Java Clone Backed By Microsoft

BY CAROL SLIWA

A small software company in Berkeley, Calif., created a mild stir in the Java world last week when it announced that its independently developed, small-footprint virtual machine for embedded systems will add support for Microsoft Corp. extensions.

Transvirtual Technologies Inc. CEO Tim Wilkinson said giving developers a choice was the main motive for his Microsoft-backed Kaffe Java clone, announced on the eve of Sun Microsystems Inc.'s JavaOne conference.

"I wanted to let people implement using whatever tools they like, such as [Microsoft's Visual] J++, and let them deploy on any operating system they like," Wilkinson said.

Transvirtual's independently developed virtual machine and class libraries also support Sun's Java technologies. Microsoft paid Transvirtual to provide extensions to its Kaffe virtual machine, Wilkinson said. He declined to disclose the amount but claimed that it's "not a lot."

Windows-Only

Microsoft's Java extensions have been a source of controversy because they run only on Windows and thwart Java's cross-platform pledge. They have also cropped up in Sun's breach-of-contract suit against Microsoft, a Java licensee.

A federal court's preliminary injunction permits Microsoft to ship its own independent Java technology. Independently developed Java clone technology is legal as long as the vendor provides compatible and complete implementations, a Sun spokeswoman said.

"I think the real issue is standards compliance. If these end up not conforming to the same standard and fracturing it, it's going to end up looking like the Unix market," said Clay Ryder, an analyst at Zona Research Inc. in Redwood City, Calif. ■

Sun Advances Java Everywhere, Even for Corporate Use

Sun peppered developers at the JavaOne conference last week with announcements designed to deliver Java to platforms such as huge corporate servers and tiny consumer devices.

But Sun officials told *Computerworld* about plans to offer a development tool designed to build corporate Java applications. "We don't have a great [integrated development environment] at Sun.... We need to get that fast," said Alan Baratz, president of Sun's software products and platforms division. Sun has yielded the Java tools market to Symantec Corp., Inprise Corp., IBM and others. But Baratz said their tools have left a market open for Sun.

Topping the list of official announcements, Sun sought to offer developers a clearer picture of how the

myriad Java services, interfaces and other technologies fit together by streamlining them into three editions: Java 2 Platform, Enterprise Edition, for heavy-duty server applications; Java 2 Platform, Standard Edition, which includes support for PC clients and workstations; and Java 2 Platform, Micro Edition, for appliances and small devices such as pagers and personal digital assistants.

Sun also focused on Java deployment by making its Java Server Pages technology — which lets developers build interactive Web sites — available for the open-source, widely used Apache Web server. It will also use its alliance with America Online Inc. and Netscape Communications Corp. to distribute its Standard Edition on millions of AOL disks and in the upcoming Version 5.0 of Netscape's browser. — David Orenstein and Carol Sliva

**JAVAONE
CONFERENCE**

Sun's HotSpot to Speed Client Performance

Distribution still a challenge for corporate users

BY CAROL SLIWA
SAN FRANCISCO

Corporate users troubled by Java's client-side performance should see some relief next year when Sun Microsystems Inc. builds a HotSpot Performance Engine in its Java 2 Platform for desktop computers.

Sun officials said the smaller footprint virtual machine (VM) — which is due by the end of March 2000 — will help applications start faster and reduce the pauses that occur with applications that use Java's Swing graphical user interface.

But though corporate users said they would welcome the new HotSpot VM for performance reasons, that won't mean the end of client-side

headaches. They still have to make sure their end users get that Java 2 Platform, Standard Edition VM on their desktops.

"Until the browsers are consistent, it's no value to me," said Thomas Geer, a software engineer at Visa International Inc. in San Francisco.

Companies that can control end-user environments can deliver the new VM via Sun's Java plug-in. But in Geer's case, end users at banks access applications via the Internet.

The two major browser vendors, Microsoft Corp. and Netscape Communications Corp., have erratically supported Java. Netscape's upcoming Navigator 5.0 browser promises to have upgraded Java support, but it's unlikely that the new HotSpot VM will make it into that version.

Meanwhile, Microsoft and Sun remain embroiled in a contract dispute regarding Microsoft's failure to provide

complete support for Sun's Java technologies (see related story, page 30).

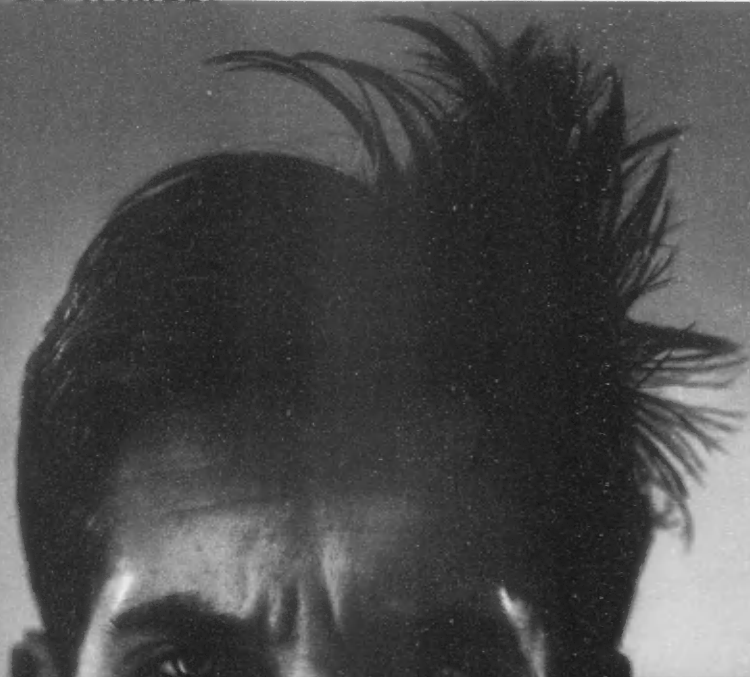
That combination of vendor and performance issues has led many corporate developers to use HTML (the Internet programming language) and JavaScript when they use browsers as clients. But several users said HotSpot will be worth a look.

"Anything we could do to get better performance, we'd be looking at," said Lisa Villarreal, a senior vice president in technology services at Charles Schwab & Co. in San Francisco.

Last week's HotSpot performance-boost pledges extended to the server as well. Sun said HotSpot 2.0 — which promises a 30% to 40% performance improvement — is expected by year's end. An early access release will be available in August, company officials said. ■

Senior writer David Orenstein contributed to this story.

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BRIEFS

Census Bureau Hires IBM to Run FactFinder

IBM last week signed a \$35 million, nine-year contract with the U.S. Census Bureau to operate and maintain American FactFinder, a Web-based repository of data that covers more than 100 million U.S. households and more than 20 million U.S. businesses. American FactFinder will run on two IBM RS/6000 SP computers at the Census Bureau in Suitland, Md.

H-1Bs are Tapped Out

The U.S. Immigration and Naturalization Service last week said it has stopped accepting H-1B visa applications for this fiscal year because the 115,000-visa cap has been reached. Another 115,000 visas will become available in October. There are also efforts under way in Congress to boost the number of H-1B visas, many of which are used to fill information technology positions.

E-Mail Service Pledges Privacy

Santa Clara, Calif.-based ZipLip.com Inc. has launched an e-mail service that it said keeps both the sender and recipient's identities private. ZipLip.com encrypts messages on its Web site and shreds them after they're sent. The service will be free to business users for a 30-day trial period starting July 4.

Going Once...

Amazon.com Inc. and Sotheby's Holdings Inc. said last week they will launch a joint online auction service later this year. Under a 10-year pact, Amazon.com will invest \$45 million in the venture.

Short Takes

Magazine publisher MEREDITH CORP. has renewed its outsourcing agreement for ELECTRONIC DATA SYSTEMS CORP. to manage core information systems for five years. ... MICROSOFT CORP. last week said it will ship an update to the third beta of its Windows 2000 operating system sometime between the end of June and the beginning of July.

Happy Developers Key To Notes R 5 Success

More functionality needed to fend off Microsoft

BY DOMINIQUE DECKMYN

AT ITS DEVCON99 developers conference in San Francisco this week, Lotus Development Corp. will showcase the enterprise connectivity and Web integration capabilities of its Notes/Domino R5, which shipped in April. But with its chief competitor, Microsoft Corp., making headway with application developers, analysts said the future of R5 depends a lot on whether Lotus can keep developers happy.

Developers are looking for more help from Lotus. "The main thing we need [Lotus] to address is more robustness and functionality on the development side," said Stephen Wilson, a project engineer at

Phoenix-based AG Communication Systems, a division of Lucent Technologies Inc.

Despite the advances in Domino 5, the platform is still not entirely "client-agnostic," meaning developers can't easily write one application that can be accessed in the same way from a browser and the new Notes 5 client, Wilson said.

In recent months, Microsoft

has sought to make Exchange look like more than a messaging server. Microsoft has outlined its plans for the next-generation Exchange server, code-named Platinum, which will feature a document store called the Web Store and a personal portal called the Digital Dashboard. Platinum is expected to ship early next year.

Microsoft has also started to go after application developers more effectively, said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass. "If [Lotus] can't retain the developers, they're in trouble," Levitt said.

But Jonathan Penn, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Lotus still has "99% of the mind share" in the area of knowledge management. Lotus has also successfully been playing up its connectivity to legacy data.

Group Leaders	
New groupware users, U.S., Q1 1999	
Microsoft Exchange	1.9M
Lotus Notes/Domino	1.4M
Novell GroupWise	1M

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

PC Expo: Not Just for Desktops Anymore

Mobile gear shares spotlight

BY MATT HAMLEN

It's called PC Expo, but because the PC has become mobile, so has much of the show.

This week's PC Expo in New York will feature traditional desktop computers, but laptops, handhelds and smart phones figure heavily in the mix of 500 exhibits.

"The past year has seen explosive growth in the remote-access arena, especially palm devices," said Randy Zane, a spokesman for PC Expo.

Taming the Beast

However, a persistent problem for business information technology managers is how to manage all the devices and keep ownership costs down, analysts said.

In response to that need, IBM plans to demonstrate a new version of Netfinity Director with a Java-based man-

agement console and server for tracking laptops, desktops and handhelds and deploying software updates on them. The client-based software will start to appear in products later this summer, IBM officials said.

Also in the systems management area, Hewlett-Packard Co. in Palo Alto, Calif., will display the abilities of netDeploy 4, technology from Open Software Associates Inc. in Nashua, N.H., that allows HP to preload all operating system and application software on new PCs. The preloads will allow IT managers to automatically update applications easier and faster, HP officials said.

To enable backup for laptop users, Iomega Corp. in Roy, Utah, will unveil Click, a 40M-byte, PC Card-size removable drive.

In the wireless remote-access arena, NovAtel Wireless in San Diego will show a wireless PC Card modem for laptops and Windows CE devices priced at \$279.

Qualcomm Inc. in San Diego

will show the pDQ smart phone, a combination of a cellular phone and a PalmPilot handheld for data transmission.

A variety of laptops enabled with new 400-MHz Intel Pentium II processors will appear, as well as sublaptop computers in the Windows CE Jupiter class. Acute Technologies Inc. in Milpitas, Calif., will demonstrate its new Linux- and Windows CE-based terminals, called ThinCast. Pricing for ThinCast starts at \$299.

Compaq Computer Corp. will formally announce its entry into the microportable projector market with a 4.2-pound device.

In other areas, IBM and HP plan to demonstrate eight-way servers with Intel Corp.'s Profusion chip set. Neither product will be available for several months because Intel has pushed back release of its Profusion chip several times.

Stacy Collett contributed to this story.

Online Wallet Standard Proposed

Buyers won't have to fill out forms

BY JULIA KING

It just got easier to open your wallet online.

Last week, several of the largest e-commerce players agreed on a universal format for electronic wallets and collecting customers' shipping, billing and credit information online.

Known as the Electronic Commerce Modeling Language (ECML), the format contains common data fields for collecting standardized customer and credit information across merchants' Web sites.

For online buyers, that means less hassle filling out different forms at different sites.

Instead, shoppers fill out their customer information once on a standard electronic wallet form and store it on their computer as an icon, which they drag and drop to ECML-compliant sites where they shop. All information for the new site is filled out automatically with a single click.

ECML will work with online merchants' existing data privacy and security technologies, according to the ECML Alliance, which is backing the proposed standard.

Hassle Factor

Merchants expect the reduced hassle factor to boost the number of transactions that customers complete online. Currently, 27% of online shoppers abandon their orders before checkout because of the time and inconvenience involved in entering information, according to Jupiter Communications Inc. in New York.

"New customers coming to our site will no longer need to fill out shipping, billing and credit information," said Ken Hawk, an executive at iGo, an online vendor of mobile computing and communications gear in Lake Tahoe, Nev.

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UPS to Upgrade Handhelds For Real-Time Parcel Tracking

\$100M project to make managing drivers and trucks more efficient

BY MATT HAMLEN

UNITED PARCEL Service of America Inc. last week announced a \$100 million third-generation package-tracking system under which drivers will use ruggedized handheld computers for two-way wireless communication.

Analysts said the system will help keep the package delivery company competitive in a field

where efficiency is central to earnings. UPS officials said the system gives them an edge over competitors like RPS Inc. because it provides real-time contact with drivers.

The system was put to use last week in 13 cities and will be deployed to 50,000 drivers worldwide in the next two years. UPS installed the first generation of the system, which uses the Deliver Information Acquisition Device

(DIAD) III made by Motorola Inc. in 1990.

To use it, drivers capture authorization signatures on the handhelds, and the data is sent wirelessly almost immediately to a central repository for package tracking, UPS officials said. In the past, drivers linked over a cellular network for trucks at 30-minute intervals.

In addition, central dispatchers will now be able to inform drivers wirelessly with a text

message on the handheld to change their route for a special pickup.

An actual transmission with DIAD III will take 0.3 second, compared with 10 seconds under the old method. With millions of such transmissions each day, UPS will see "significant" savings in network works costs, said Vice President Dudley Land. UPS receives 4 million tracking requests per week on its Web site.

But Land said the \$100 million investment in proprietary handhelds and network sup-

port is justified even without the network savings. "It's a very competitive environment, and we needed to demonstrate ... good reason to remain loyal to UPS," Land said.

Analysts said the wireless network savings is difficult to track, but the reduction in driver time and frustration will be considerable. Drivers will no longer have to fiddle with transmitting information back in a truck, saving one or two minutes each time, said Warren Powell, professor of operations research at Princeton University in Princeton, N.J.

"If you plug in savings on the drivers' communications time, it's just monster dollars with the mammoth level they're at," Powell said. "UPS is famous for shaving off pennies and nickels." ■

Continued from page 1

Bank

year, \$50 million undertaking that started in 1997, HSBC will rip out its old packet switches and X.25 lines and replace them with feature-rich frame-relay access devices (FRAD) and private frame-relay connections. A FRAD funnels data, voice and fax traffic onto frame-relay links.

So far, HSBC has teamed with no fewer than 42 carriers around the world, persuaded a small vendor — Phoenix-based Hypercom Inc. — to customize its FRADs and paired with Unisys Corp. in Blue Bell, Pa., for logistical services.

"The new [standardized] network will let us support bandwidth-intensive applications and provide every desktop access to them from anywhere in the world," said Tim Cureton, group head of telecommunications at HSBC in the U.K. Applications developed in one region can quickly be deployed worldwide over the network, he added.

That will be the plan for works in progress such as a TV-based banking application in the U.K., an Internet securities tool in Asia and a retail Internet application in the U.S., Cureton said.

"It's crucial that they have applications worldwide that can be accessed from any point, as that will help their

Global Network
HSBC's international network replacement timetable:

Hong Kong: 400 to 500 sites up
Canada: 80 sites up
U.S.: 130 sites up
U.K.: More than 600 sites up, 1,000 left by year's end
Saudi Arabia: Starting soon to bring 60 sites up
India: Starting soon to bring 40 sites up
South America: 2,000 sites planned, start date TBA
1999 acquisitions expected to grow the network:
United States: Republic New York Corp., 63 sites in N.Y.
Korea: Seoul Bank, 200 to 300 sites
Malta Bank: 60 sites

multinational customers compete on a worldwide basis by being able to check their consolidated cash position," said Bob Landry, an analyst at TowerGroup in Needham, Mass. "A company doesn't want to borrow money in the U.S. if they can transfer what they need from Asia."

The limited bandwidth on HSBC's original X.25 network had slowed critical e-mail delivery and prevented the company from deploying workflow and executive-support applica-

tions, Cureton said.

Two keys to the project were the selection of a single FRAD vendor willing to work closely to meet HSBC's needs and of a services company with a global presence to handle installation of the new gear.

HSBC assembled from its banks around the world, which include The Hongkong and Shanghai Banking Corp. and England's Midland Bank, a

team of top technology experts, who chose upstart Hypercom for equipment over networking giant Cisco Systems Inc. Separately, Unisys was chosen for logistical support.

HSBC worked with Hypercom to make more than a dozen additions to its FRAD, such as adding the ability to prioritize traffic, support legacy automated teller machine

and teller-terminal protocols and even country-specific software features, Cureton said.

By supporting old protocols, HSBC didn't have to wipe out its investment in several hundred dumb terminals. Although the value of the terminals pales in comparison with the project cost, retaining existing equipment and just changing the network was a key goal of the project. ■

More Retailers Outsourcing Day-to-Day IT

Such contracts allows them to focus on specialty systems such as e-commerce

BY BARB COLE-GOMOLSKI

Spurred by a need to focus on strategic applications, including e-commerce, more and more retailers are outsourcing for routine systems.

Rocky Hill, Conn.-based Ames Department Stores Inc. earlier this month became the latest retail giant to hand over its day-to-day information technology operations to an outsourcer.

A spate of others — including CompUSA Inc., Dayton Hudson Corp. and Montgomery Ward & Co. — have done the same in the past few months.

Industry consolidation has left many retailers with several different suites of core applica-

tions, which can be difficult to integrate and expensive to maintain in-house, analysts said.

Retailers have also been hit hard by the IT labor drought. With IT budgets that pale in comparison with those in other industries, they have found it tough to remain competitive in the current IT job market.

"We're really seeing an explosion of big [outsourcing] deals" in the retail industry, said Ed Jimenez, an analyst at Gartner Group Inc. in Mountain View, Calif.

In the past, retailers might have outsourced pieces of IT, but "now we're seeing these deals where integrators will take over staff and run the op-

erational systems at stores and the corporate office," he said.

Jimenez said about 25% of retailers currently outsource part of their IT operations. But according to a recent Gartner survey of 87 retailers, almost half of the respondents said they're investigating outsourcing — often for help desk and desktop support.

Another key is that "outsourcing of our mainframe operations allows us to focus our resources on creating technology that gives us a competitive advantage," said Vivian Stephenson, CIO at Dayton Hudson in Minneapolis. Those include data warehousing, merchandising and e-commerce systems.

Late this summer, Dayton's Target unit will launch a revamped Web site that will feature expanded online shopping capabilities. ■

They needed
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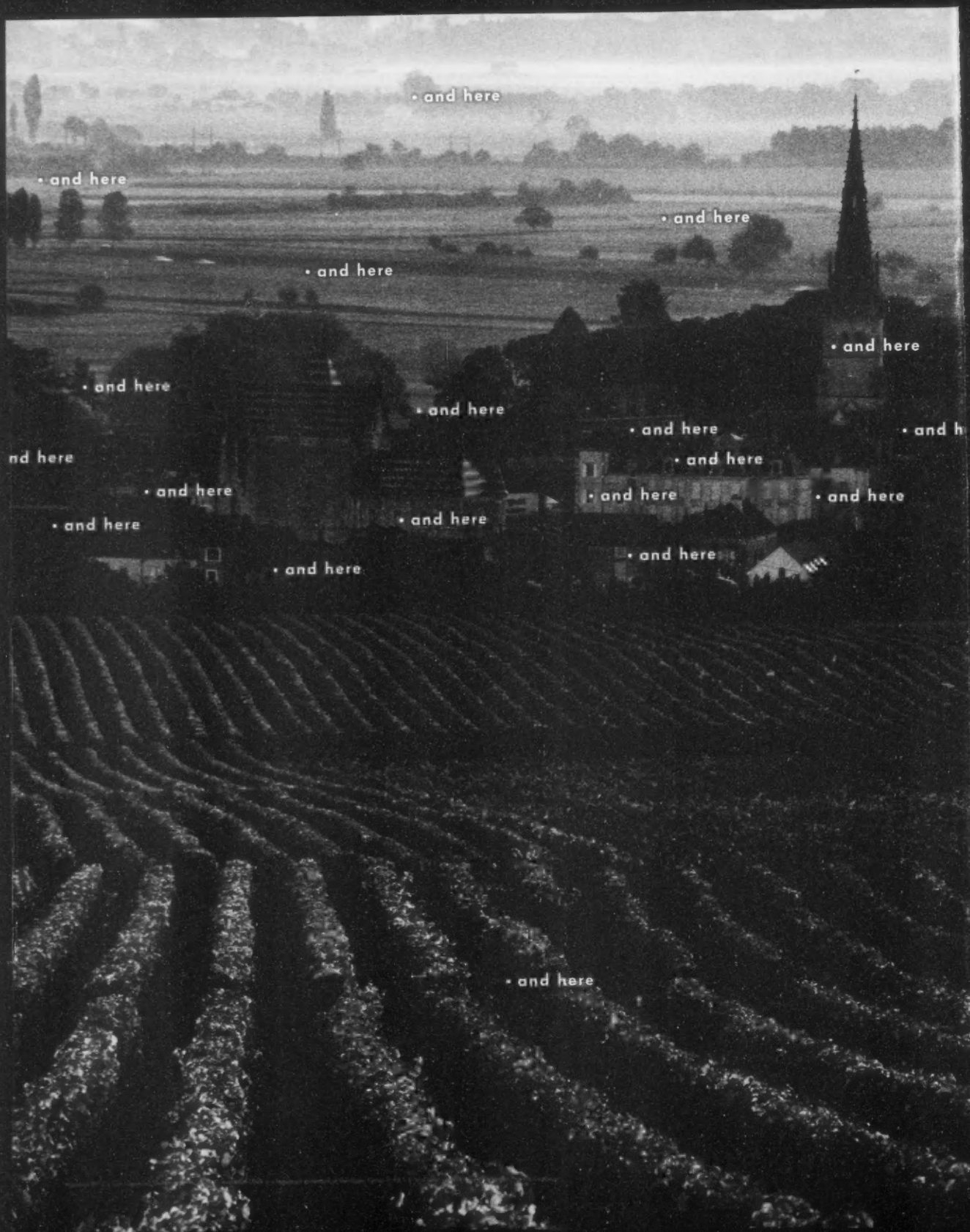
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Brokerages Invest in Electronic Auctions

Alternatives to the Big Board, its brethren pick up speed among traditional traders

BY THOMAS HOFFMAN

ANOTHER DAY, another electronic threat to the top U.S. stock markets. That's how it seems on Wall Street these days, as electronic communications networks (ECN) sprout like weeds and are watered by the nation's top brokerages.

ECNs are alternative marketplaces where investors can buy and sell stocks.

Although those networks are

specific to the securities industry, they illustrate how Internet-based companies such as Amazon.com Inc. can leverage information technology to shake up an industry. Amazon has not only eaten into the retail book market, but it also is dictating pricing in that sector by offering *The New York Times* best sellers at half off their list price.

Last week, two of Wall Street's heaviest hitters — Merrill Lynch & Co. and Goldman, Sachs & Co. — an-

nounced a partnership with Bernard L. Madoff Investment Securities to create an electronic auction platform called the Primex Auction System. When it goes live next year after the securities industry shifts stock pricing from fractions to decimals, Primex will be aimed at providing better pricing than the New York Stock Exchange (NYSE) or the Nasdaq Stock Market Inc.

Pricing Competition

Primex executives claimed that the service will be able to offer more competitive pricing for stocks by opening up those orders to a larger crowd of electronic participants.

Who are the ECNs?

NETWORK	OWNERS	WHAT IT DOES
Instinet	Reuters	Global broker
Brut	Merrill Lynch and nine others	An over-the-counter trading system
Island	Datek Online	Order-matching system
TradeBook	Bloomberg	Lets users trade with one another
Strike	Bear Stearns, J. P. Morgan and nine others	Designed for professional investors
Nextrade	Pim Global Equities	Aimed at being easier to use than Nasdaq
Attain	All-Tech Investments	Targeted at broker-dealers and day-traders
RediBook	Spear, Leeds and Kellogg	Supports proprietary RediPlus system
Archipelago	Includes ETrade and Goldman Sachs	Handles trading for broker/dealers

But even if Primex and other, similar electronic networks aren't out to replace the NYSE or Nasdaq, they're sounding a wake-up call.

Nasdaq, for example, is al-

ready losing between 20% and 35% of its trading volume to ECNs, said Larry Tabb, a financial analyst at TowerGroup in Needham, Mass. Stock exchanges and brokerage firms

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alike "are all looking at ECNs as [either] a threat or an opportunity," Tabb said.

Earlier this month, Morgan Stanley Dean Witter & Co. and Salomon Smith Barney agreed to invest in Eclipse Trading Inc., which plans to introduce an after-hours trading system for individual investors this summer [CW, May 31].

Partnership Plans

The introduction of Primex may also accelerate plans by the NYSE and Nasdaq to partner with those upstart trading networks.

"People have been predicting the demise of the New York Stock Exchange for 200 years, and yet it continues," largely because it has changed with the times, said Raphael Soifer, a securities analyst at Brown Brothers Harriman in New York.

Although Soifer said "nobody knows" how the proliferation of ECNs will reshape the

market, one thing is certain: "The Merrills and Goldmans of the world are placing their bets," he said.

Glen Shipway, CEO of Primex Trading NA in New York, said his group has had "preliminary discussions" about developing partnerships with the NYSE, Nasdaq and other stock exchanges.

A NYSE spokeswoman declined to comment on Primex.

Primex would offer "competition against a traditional, auction-style market" like the NYSE, Shipway said. Still, Primex isn't trying to replace the NYSE but rather work with a stock market to expose stock prices to a larger electronic audience, he said.

Eventually, ECNs "will force the New York Stock Exchange to move to an electronic system," predicted Octavio Marenzi, research director at Meridian Research Inc. in Newton, Mass. ▀

PaineWebber Joins Fray With Web Trades

Strategy to serve online customers, do processing on mainframe long in works

BY THOMAS HOFFMAN
NEW YORK

Sheer coincidence. That's all it was when PaineWebber Inc. announced online stock-trading plans just days after rival Merrill Lynch & Co. stunned Wall Street with its low-cost online trading strategy [CW, June 7].

Really.

"We started working on this a year and a half ago. We didn't just throw this together," PaineWebber CIO Scott Abbey said last week.

Merrill Lynch's announcement "didn't change our [online] strategy," added Robert H. Silver, the company's execu-

tive vice president and director of operations, service and systems.

The New York-based brokerage has already launched an alpha test with 60 clients who are now trading stocks online, it said.

Secure Site

Using a secured Web site, customer trades are first routed to a set of PaineWebber Unix servers and then handed off to its mainframes, which process the trades.

However, unlike Merrill Lynch, which

plans to charge customers \$29.95 per transaction to trade up to 1,000 shares of stock online, PaineWebber has no plans to offer low-cost trading services, Silver said.

Instead, beginning in the third quarter, PaineWebber will offer fee-based cybertrading to customers who use the Edge, its Internet-based online account service.

PaineWebber currently has 240,000 client accounts on the Edge. Each of its Edge households has about \$850,000 in assets.

Silver said PaineWebber hasn't determined yet how much the brokerage will charge customers for online trading. ▀



CIO SCOTT ABBEY says PaineWebber is alpha-testing online trading with 60 customers


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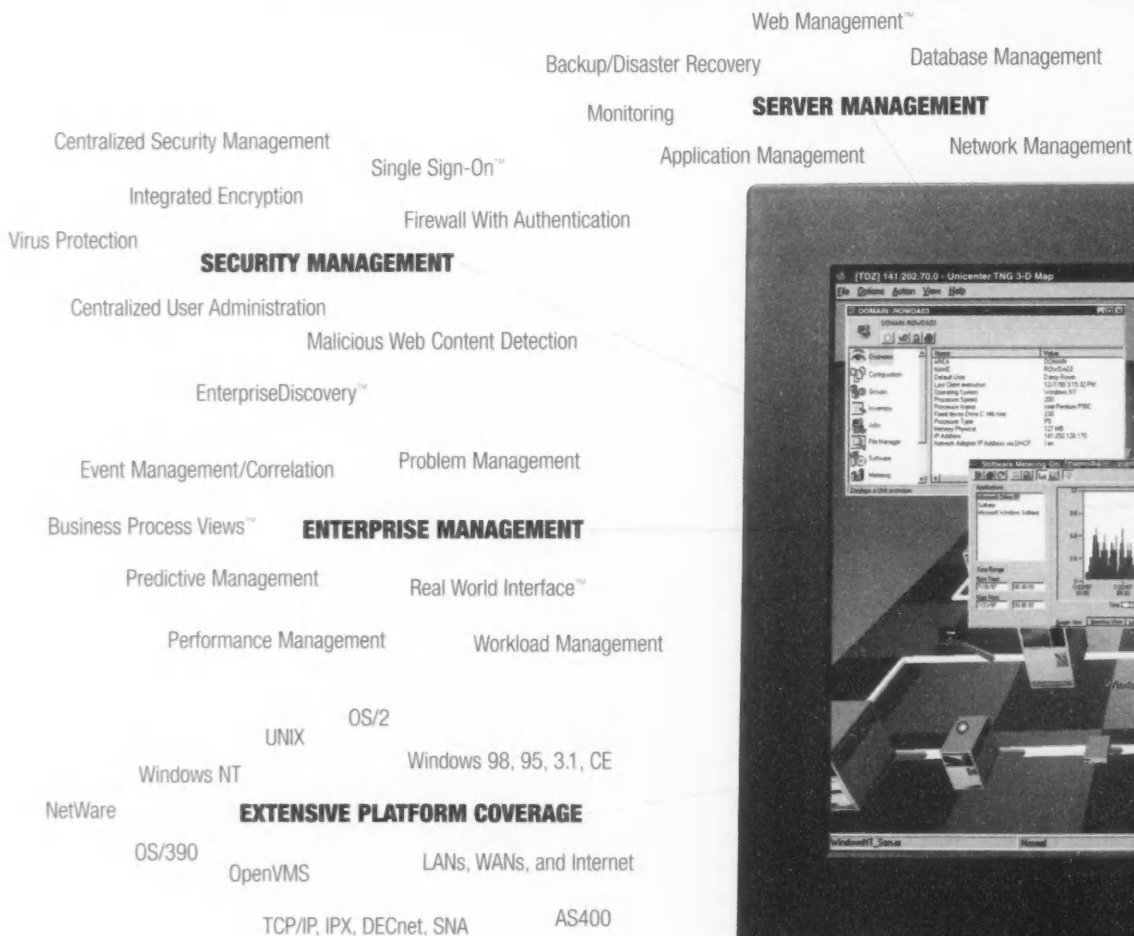
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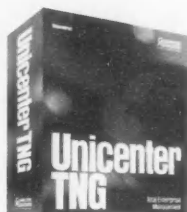
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Brokers Get Data Nuggets Through 'Pretext Calling'

Federal Trade Commission is cracking down on personal data trafficking

BY KIM S. NASH

THE UNDERGROUND market in personal information is like any other: It has buyers, sellers and suppliers of raw material.

The buyers include lawyers and employers, who want financial and medical data about litigants, employees or job applicants. The sellers are "information brokers," who use a variety of tricks — most of them legal, some legally hazy — to obtain those personal details.

And who supplies the raw material? Corporate employees who have been duped into divulging the salaries, bank balances and medical histories held in customer information systems.

The data traffickers use a technique known as "pretext calling." That's when a broker telephones a bank, for example, and impersonates a customer to get information about his account. Armed with details such as Social Security number and address, the bro-

ker persuades customer service agents to reveal more valuable nuggets.

As one data dealer advised in a recent online post: "You can't be afraid to play roles and place yourself in positions of getting caught. . . . You can always hang up."

But the Federal Trade Commission calls the ruse illegal and is cracking down. In an April lawsuit against Denver data broker Touch Tone Information Inc., the agency said the practice is deceptive, unfair and "a particularly pernicious invasion of consumers' privacy."

FTC officials set up a sting, recording a pretext call allegedly from Touch Tone to Bank One Corp. in Chicago, seeking — and gaining — customer account information that was later sold.

"We caught them on tape lying to a federally insured bank to obtain financial information. And the trafficking is the unfair part," said David Medine, an FTC official on the case.

In the information underground, facts are compiled in databases, sometimes transferred to clients electronically or sold on the Internet. Hundreds of information brokers advertise online and on Web chat boards and e-mail listservs are full of deal-making traffic.

Certainly not all information dealers are underhanded. Most probably don't break any laws, agreed both privacy advocates and brokers. And the strength of the FTC's legal case is unclear.

Touch Tone filed court papers last month that said the FTC doesn't have authority to pursue the case because, among other reasons, the agency is charged with protecting consumers and a bank isn't a consumer. Touch Tone also said it shouldn't be blamed if banks give out "confidential information by virtue of a telephone call, without adhering to its security protocols."

Risky Business

Last month, the American Bankers Association in Washington met with local bankers to warn them that pretext calling is growing — and banks could be held liable if customer information is revealed in error.

"Bank employees who release information risk penalties or legal action by their employer, the government and the customer," a spokeswoman for the trade group said. "We say, take this issue seriously."

Information brokers often use public databases such as court rulings or motor vehicle records to get started on a search about someone. They then use that routine data to concoct ruses to get more sensitive information from other sources.

The same techniques work

for people seeking private medical data, said Rob Douglas, CEO of American Data Protection Services Inc. in Alexandria, Va.

A pretext caller with a search target's name, date of birth and Social Security number can easily call a hospital and pretend he's filling out forms for a new insurance policy. Insurers often ask applicants for prior medical history.

Companies are easily deceived, and a big problem is that some don't separate sensitive data from routine customer records,

said Bob Campbell, managing director at Alpine Computer Systems, a security and privacy consulting company in Woodbridge, Va.

What's needed are multi-level access controls. "I've gone into organizations where all the personal information regarding a customer — financial or insurance data, for example — is available to all the employees that have any role in [customer] service," Campbell said.

Meanwhile, as the Touch Tone case progresses, company owners James and Regana Rapp agreed to stop pretext calling but "do not admit to any of the actual allegations," said their lawyer, Jim Butera, at Butera & Andrews in Washington.

Butera wouldn't say whether the Rapps are still in business and advised his clients not to do interviews.

To help Touch Tone fight the government and to defend pretext calling, brokers have formed a lobbying group that raises money by charging customers an extra \$5 per search.

"Pretext is just a technique to mine data," said Lee Wind, a founder of the Coalition to Amend the Financial Information Privacy Act, in Mamaroneck, N.Y. "It is done very

specifically and in all the cases, at least by the scrupulous brokers, for what we consider to be justifiable legal purposes."

The practice isn't wrong, in part because many brokers use it for good causes, such as to track down withheld child-support money or divorce settlements, he said.

Wind, an information broker in New York, co-founded the coalition last year to combat a bill pending in Congress that would outlaw obtaining someone's financial information under false pretenses. A vote on H.R. 30 is expected this year.

The FTC's Medine declined to say if the agency plans to pursue other information brokers. But he added, "If I were trafficking illegally in medical or financial information, I would not rest easy."

Stopping Leaks

Aside from written — and enforced — policies against customer information leaks, companies can use technology and common sense to help guard against data seepage.

■ Database administrators can create dialog boxes that pop up on a customer service agent's screen when particular data is requested. For example, a pop-up note might ask, "Have you verified the caller's identity sufficiently?"

■ Programmers can write routines to track the frequency of calls about each customer account. Lots of calls about a single account can indicate someone trying to pry. When a threshold is crossed, the agent could be advised to transfer the caller to a security manager.

■ Agents should also be alerted to commonsense discrepancies, security consultant Rob Douglas said. "If a banker sees on his screen that the customer is 67 years old and the person on the line doesn't sound that way, be aware," he advised.

■ IT managers should also check up on outsourcers, which frequently hire subcontractors or even part-time at-home workers to do the routine data entry. Yet "there's very loose accountability" as the work moves further from the core company, privacy consultant Bob Campbell said. "The information brokers know where all these leakage points are." — Kim S. Nash

Profile: Jane Doe

For \$750, Computerworld hired an information broker to create a profile of our subject, whose name and complete Social Security number have been omitted to preserve what little privacy she has left. The following sampling of data, however, is real:

Date of birth: 6/22/53

Social Security number: 102-XX-XXXX

Cars: 1997 Lexus ES300, 1992 Lexus LS400, 1982 Toyota Cressida, 1986 Chevrolet C10 pickup truck (all cars traced to Doe are registered to her husband, whose Social Security number and date of birth were also recovered)

Cost of house: \$219,500

Amount financed: \$196,650

Annual real estate taxes: \$3,782

House description: Four bedrooms, two-and-a-half bathrooms, two fireplaces, on 1.3 acres

Next-door neighbors: The Capones on one side; Stephen Pope on the other

Criminal record, driving tickets, liens, bankruptcies: None



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Digital Users More Upbeat About Compaq Plans

BY JAIKUMAR VIJAYAN
PROVIDENCE, R.I.

User concern about Compaq Computer Corp.'s commitment

to acquired Digital Equipment Corp. technologies like OpenVMS, Tru64 Unix and Alpha may be slowly abating.

Digital Equipment Computer User Society (DECUS) conference attendees here last week said that, despite initial fears,

they're more optimistic about Compaq's intentions to support and advance the technologies.

Separately, as expected, the U.S. board of DECUS last week proposed plans to dissolve the organization and form a new

one called the U.S. Association of Compaq IT Professionals, which will represent users of Digital and Tandem Computers Inc. products [CW, May 31]. There were no further details.

"I heard about it for the first time only when I got here," said Rick Hallett, a longtime VMS user and MIS manager at Arrow Tru-Line Inc. in Archbold, Ohio. "So long as the new group represents user interests, I have no problem with it," he said.

Users also seemed more confident about future technology support. The reactions contrast with the results of an April *Computerworld* survey in which 31% of the 59 information technology managers who responded said they felt less secure about the future of core technologies like OpenVMS, Alpha and Digital Unix (since renamed Tru64 Unix) under Compaq; only 29% said they felt more secure.

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Digital Comfort

Do you feel more secure, less secure or the same about the future of core Digital technologies than you did this time last year?

More secure	29%
Less secure	31%
The same	39%
Don't know	1%

Based April survey of 56 U.S. IT managers at companies that use Digital products.

SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT, FRAMINGHAM, MASS.

The new attitude has come about because Compaq has started to more aggressively market those technologies — through advertisements and sales staff — as part of its core enterprise strategy, said Joseph Pollizzi, former president of DECUS and deputy head of science and engineering systems at the Space Telescope Science Institute in Baltimore. "What remains to be seen is how well they execute" long-term plans to develop and support the technologies, he said.

Fritz Schwager, a systems programmer at the College of Charleston in Charleston, S.C., added that Compaq's repeated assurances of support, its continued enhancements of technologies like OpenVMS clustering and its quick reversal of a decision to discontinue desktop OpenVMS last fall [CW, Oct. 5] show that the company is serious about OpenVMS. ■



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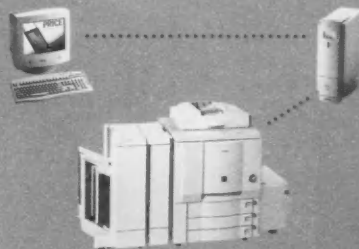


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BRIEFS

Alcatel Invests \$180M To Buy VPN Vendor

Alcatel said it would acquire Sunnyvale, Calif.-based Internet Devices Inc. for \$180 million. Paris-based Alcatel said it would use products developed by the maker of IP-based virtual private network (VPN) technology to boost its intranet and extranet service offerings.

Nortel President to Step Down by Aug. 31

Toronto-based Nortel Networks Corp. said President Dave House will step down by Aug. 31. House was CEO of Bay Networks Inc., which Nortel acquired for \$1.9 billion a year ago.

NEON Buys Windows Tools Maker

New Era of Networks Inc. (NEON), an application integration vendor in Englewood, Colo., has agreed to buy MicroScript Inc., a Danvers, Mass., developer of Windows-based integration tools, for \$34 million.

Senate OKs Y2K Liability Legislation

The U.S. Senate last week joined the House in approving Y2K liability-limiting legislation. But its 62-37 vote fell five votes short of a veto-proof margin. The White House has threatened to veto both bills, saying they don't offer consumers enough protection. The House and Senate will try to reach a compromise. Both bills cap punitive damages and set a 90-day "cooling-off" period.

Cisco to Pay \$407M For TransMedia

Cisco Systems Inc. agreed to buy TransMedia Communications Inc., a privately held maker of IP gateways for third-generation networks, for about \$407 million. The deal will help Cisco offer migration from circuit-based networks to third-generation, packet-based networks to telecommunication carriers.

Compaq: Reality Sinks In

Analysts call layoffs, reorg without a CEO and expected buying freeze risky moves

BY MATT HAMBLIN
AND KATHLEEN OHLSON

COMPAQ Computer Corp. last week announced a reorganization that will entail layoffs. The news comes on the heels of an expected second-quarter loss. The reorganization will create three groups: Enterprise Solutions and Services, PCs, and Consumers. But several analysts said it sounded like there would be duplication, with the PC group split between consumer and corporate sales.

Analysts also said it's risky to make the organizational changes without a new CEO.

Compaq's expected loss of 15 cents per share follows last quarter's \$281 million (16 cents per share) profit. That April result disappointed analysts and led to the ouster of CEO Eckardt Pfeiffer. Several top executives have since left.

Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif., said the time needed for Compaq to adjust to organizational changes will continue into the third

quarter. Several analysts said they expect a Y2K buying freeze on technology products could slow Compaq sales.

Compaq executives said the worldwide sales force will remain in place after the reorganization to preserve customer contacts, with layoffs mainly hitting the middle management ranks. No estimate on the number of jobs that will be affected was made.

The company also described plans to beef up direct sales of computers by adding 17 call

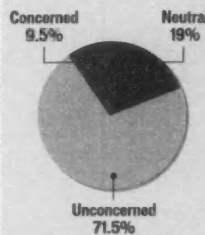
centers worldwide, with hopes that 25% of sales will be direct by the fourth quarter. The company said it will sell PCs with other services. Compaq expects a new CEO to be named in the "not too distant future," said Benjamin M. Rosen, chairman and acting CEO.

In spite of some doubts, analysts said the organizational changes are needed at Compaq. "I would call the changes the lancing of the boil growing on Compaq," said Roger Kay at International Data Corp. in Framingham, Mass.

The earnings prediction caused a quick 5% reduction in value of Compaq's stock last Thursday. ▀

Survey Snapshot

In April, Computerworld asked Compaq customers: How concerned are you about Compaq's earnings shortfall?



Source: Survey of 137 U.S. IT managers

Qwest Leads in Bidding for US West, Frontier

Would be 'cleanest fit' for customers, analyst says

BY BOB WALLACE

It's a bidding war for regional Bell US West Inc. and data center host Frontier Telecom, with a tantalizing grand prize for the winning telecommunications company: An opportuni-

ty to supplement its own networks with local links to more than 30 million customers.

Upstart Qwest Communications International Inc. in Denver last week offered \$55 billion for the two carriers, outbidding Bermuda-based rival Global Crossing Ltd., which was in the process of acquiring the pair for \$48 billion. Frontier officials said Qwest's bid wouldn't stop its plans to

merge with Global Crossing.

"Customer-wise, the cleanest fit is Qwest and US West because Qwest has a nationwide network with tons of bandwidth and is in search of customers, while US West serves customers who are looking for access to a state-of-the-art fiber network with tons of bandwidth," said Jeffrey Kagan, president of Kagan Telecommunications Associates, an Atlanta-based consultancy.

By contrast, Global Crossing is building an international, undersea fiber network to link major cities — initially in the U.S. and U.K. Most US West customers are in rural areas.

A Qwest/US West/Frontier triumvirate would combine 200,000 Internet access users, 220,000 personal communications services subscribers and 35,000 Digital Subscriber Lines from US West. It would also include 11 Web-hosting and data center operations centers from Rochester, N.Y.-based Frontier.

Qwest, the No. 4 U.S. long-distance carrier behind AT&T Corp., MCI WorldCom Inc. and Sprint Corp., could draw much closer to its rivals with the deal, said Christine Heckart, an analyst at TeleChoice Inc. in Boston. "Qwest wants to be a supercarrier after all the consolidation dust has settled," she said. ▀

Microsoft Argues Judge Error in Java Case

BY NANCY DILLON
SAN FRANCISCO

Microsoft argued in appeals court last week that a federal judge erred in treating Microsoft's Java-licensing dispute with Sun Microsystems Inc. as a copyright infringement rather than a breach of contract.

Microsoft's appeal seeks to end a November 1998 injunction barring Microsoft from shipping Java-enabled products that don't pass Sun's Java compatibility test suite. A ruling is expected within a year.

Appearing before a three-judge panel at the U.S. 9th Circuit Court of Appeals, Microsoft Corp. attorneys argued that Sun got the benefit of not having to prove "irreparable

harm" because such harm is presumed under copyright law. In contract cases, alternatively, plaintiffs have the burden of proving harm, they said.

Microsoft lawyers also argued that U.S. District Judge Ronald Whyte fell short in determining that Sun's material was both "original" and "protected," a necessary finding in copyright infringement cases.

Sun's lead attorney, Rusty Day, said he believed the U.S. District Court "bent over backward to be fair to Microsoft." He said the court went so far as to consider harm to Microsoft and subsequently allowed Microsoft to continue distributing Java-enabled products subject to certain conditions.

Outside the courtroom, one Microsoft attorney said it isn't fair to paint the software vendor as a pirate in this case.

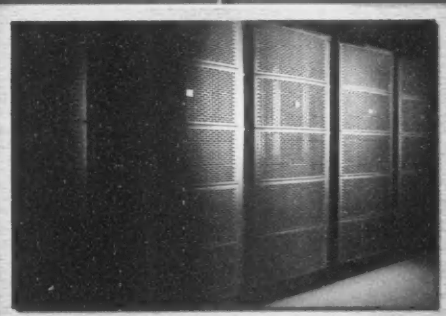
"If you take out a car with a full tank of gas and bring it back with only half a tank, it doesn't mean you stole the car," said Karl Quackenbush, a partner at Preston Gates & Ellis LLP in Seattle.

But Sun's counsel disagreed. "If I make someone a Chevy dealer, and they take out all of the Chevy engines in their cars and replace them with Yugo engines, that's not fair because they're still selling the cars under the Chevy name," Day said. "On top of that, they're changing the cars so that they only run on Microsoft gas." ▀

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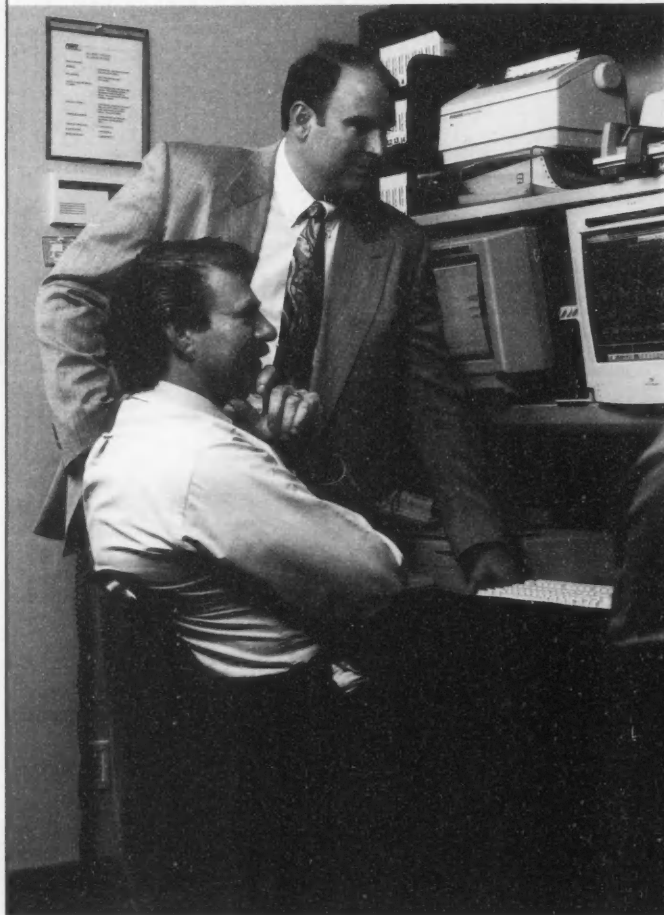
Liebert has more than 80 products designed to protect computer and telecommunications networks – whether it's a single PC or thousands of nodes spread around the globe. There's a Liebert protection system to fit every network power need, from surge protection and power conditioning to three-phase UPS for mainframe database servers. And Liebert offers all three major UPS technologies – off-line, line interactive and on-line – a claim not many manufacturers can make.

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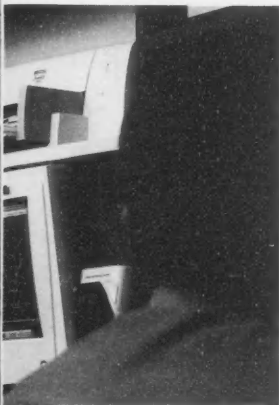
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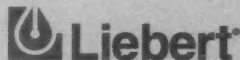
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PAUL GILLIN

Peril by e-mail

IT'S TIME TO DECLARE WAR on e-mail attachments. What was intended to be a benign feature for shuttling files around the Internet has turned into a corporate security nightmare. A profusion of new viruses over the past two months has made the problem alarming. First there was Melissa (annoying but not destructive), then CIH (destructive but not widespread) and, most recently, Explorer (destructive and widespread). E-mail-based

worms, which reproduce by foraging through your address book, are a brand-new phenomenon that crackers are only beginning to exploit. That means things are going to get worse before they get better.

All these viruses have one thing in common: They arrive as e-mail attachments. Once you launch them, there's nothing you can do to stop the destruction. That makes this a no-win situation for corporate IT. You can't tell users to stop opening attachments because that neutralizes the 99.99% of attachment-bearing e-mail that is harmless. You also can't reasonably filter and test every attachment that comes into the server.

But attachments are becoming a major security problem, an anonymous way to deposit files from outside the company on users' computers without their knowledge or consent.



PAUL GILLIN is editor in chief of Computerworld. You can contact him at paul.gillin@computerworld.com.

Corporate IT needs an alternative to them, one that takes file management away from the sender and gives it back to the user. Files should be deposited on a secure FTP server with users getting only a link back to the file name. Or IT departments should have the option of stripping files off of incoming e-mail and depositing them in secured areas where users can retrieve them when needed. Imagine how much destruction would have been prevented if companies had been able to eradicate the Explorer virus in a single location instead of across thousands of PCs.

The leading commercial e-mail products do next to nothing to enable IT to manage attachments. If there are good third-party products available, let me know at the e-mail address above, and I'll post an update on our Web site. Let's get control of attachments. Because they're taking control of us. ▀

But attachments are becoming a major security problem, an anonymous way to deposit files from outside the company on users' computers without their knowledge or consent.

DON TAPSCOTT

How car dealers can turn the Web into their friend

INTERMEDIARIES that are being squeezed by new Web-based merchants need to think fast about developing new business models. And rather than viewing the Net as simply a foe, they should develop new value propositions with the Net as an ally.

Car dealers are a good example. Profits from new car sales will soon disappear because of brutal price competition from Web-based vendors.

But instead of just watching their businesses go broke, dealers should be looking to exploit the Internet to expand their role in the rapidly evolving auto industry. They could reposition themselves as ongoing transportation advisers, providing new services for which the public will pay.

Right now, everything is coming up for grabs because all elements of the automotive industry — from the milling of steel to the upcoming wiring of pavement — are undergoing tremendous upheaval.

Cars are evolving into networked information appliances, providing users with a place for work, learning and entertainment. Increasingly, it will be the services and content of cars that differentiate them.

Soon, the market will be flooded with in-car computers that not only can play CDs, but also can take voice memos, run a Global Positioning Satellite locator, display maps, dial a cell phone, read e-mail, display traffic and weather warnings and perform dozens of other functions.

Much of that software, such as maps or city guides, will need to be regularly updated. Other services, such as theft alarms, will require ongoing monthly payments. Dealers could play a key and profitable role in offering one-stop shopping for all the new services as they become available.

Once car dealers start viewing themselves as transportation advisers, a new panorama of value propositions becomes visible. Dealers could help their customers develop new forms of vehicle ownership, such as the automotive equivalent of timeshare vacations. Most people need different types of vehicles at different times but don't want to pay rental-car companies' high prices. Perhaps they would agree to pay a fixed, monthly payment for two or three years. In return, however, they could choose a different vehicle from week to week or month to month.



DON TAPSCOTT'S *Growing Up Digital* is being released this month in paperback. His e-mail address is column@tapscott.com



Rather than being disintermediated by insurance companies that will use the Internet to sell cars for a loss as part of an insurance package, the dealers could enter that business, too.

So far, most car dealers appear to have been remarkably uncreative in responding to the Internet threat. Like many other intermediaries, they seem to be in a state of denial.

But rather than wringing their hands, they should be aggressively brainstorming new value propositions so they can be part of tomorrow's digital economy. ■

DAVID MOSCHELLA

Consumers being forgotten in the copyright debate

WHETHER IT'S *The New York Times* trying to stop Amazon.com from using its best-seller list, music executives complaining about MP3 or the Business Software Alliance demanding the end to software piracy, the IT industry will be arguing about copyrights for years to come. Unfortunately, the current debate is headed mostly in the wrong direction. Big business has been steadily expanding its interests, while the voice of the consumer is increasingly being lost.

Today, even informed citizens tend to believe that the purpose of copyrights and patents is to protect the intellectual property of individuals and businesses. Indeed, the phrase *intellectual property rights* itself is shrewdly intended to give the impression that writings, software, inventions and similar ideas should basically be treated the same as physical property. However, even a cursory review of the origins of copyright and patent legislation reveals that this is simply not the case.

Although the evolution of copyright law is rooted in European — mostly English — history, from an American perspective, it's sufficient to start with our own Constitution. Article 1, Section 8 states: "The Congress shall have Power to . . . promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

The language couldn't be more clear: Copyright laws are first and foremost intended to pro-

mote the advancement of learning. To achieve that policy goal, authors and inventors can be granted temporary exclusivity. If protecting personal property were the main purpose, why would there be any need for time limits? Both conceptually and constitutionally, copyright laws should be designed to assure sufficient incentives to creators, and then go no further.

That principle can help us sort through the myriad of copyright cases that the Internet will inevitably bring. First, we need to dispense with the current propaganda that copyright owners are entitled to extract as much value as possible from their ideas. Instead, we should be asking: What is the minimum amount of protection required to ensure that creators have sufficient incentives? Those are two very different starting points. The former can be used to squelch all sorts of innovations and usage; the latter would require creators to show that, without certain protections, serious disincentives are likely.

A change in language wouldn't hurt either. Advocates of aggressively enforced copyright protection love to use inflammatory terms such as

software piracy. But that again is pure propaganda. Copying software isn't piracy — that connotes some sort of violent, theft-motivated attack. Copyright violations may well be crimes, but because they actually create additional property, they clearly aren't theft, let alone violence.

Don't get me wrong. As one who makes his living mostly through ideas and writing, I know that effective laws are needed. But what sorts of laws do we need, and whose interests are we trying to protect? Understandably, businesses and their lobbyists will push for as much protection as possible. It's up to the courts, the Congress and the people to forge the necessary balance.

Sometimes a little perspective is helpful.

The next time you hear an IT executive or politician denouncing China, Russia or whom-ever, remember this: For most of the 19th century, America routinely ignored European copyrights, arguing that they were nothing more than a way to extract money from the developing world and that they significantly impeded the flow of societal knowledge.

Were we right then, or now? ■

READERS' LETTERS

Microsoft fixed New Year virus right away

REGARDING "Russian New Year's Diabolical Twist" [Technology, May 10], this exploit was found in December by our researchers, and we contacted Microsoft about this serious hole in security.

Microsoft worked very hard and patched it immediately in December. Your article states it was found in January by Israel's Finjan Software Ltd. This patch was already done by then.

Keith Peer
President
Central Command Inc.
Medina, Ohio
keith@centralcommand.com

Gillmor off base on Microsoft pricing

THOUGH I agree with Dan Gillmor that there are probably reasons for IT professionals to be concerned about the alleged Microsoft monopoly, I question the validity of one of his main points:

"Microsoft has kept the price of Windows high while virtually every other component of the PC has gotten drastically cheaper" ["The Microsoft Trial Still Matters," News Opinion, May 31].

Though it is true that the price of Windows has remained constant over the years, the product is hardly the same. Software engineers at Microsoft have worked hard to improve Windows, and the price of hardware cannot be compared to the price of software.

As a Linux user and advocate, I certainly agree that there is room for criticism concerning the practices of Microsoft over the years.

However, the criticism should at least attack the pertinent issues.
Thomas R. Dial
Oxford, Ohio
dialtr@muohio.edu

Mac OS X deserves another look

REGARDING Galen Gruman's review of Mac OS X Server ["Mac OS X Server:

No Easier Than NT, So Why Bother?" Technology, May 31], I have to agree that the system has its rough edges.

It is, after all, a transitional release.

No longer NextStep but not yet a Macintosh, the operating system is in a somewhat messy twilight state.

It's still useful, though. Its primary audience is developers and workgroups needing traditional Unix services.

It's not yet a consumer operating system. On the other hand, it is Unix, so it's already plenty familiar, and it's amazingly stable.

For another thing, it runs well on a PowerBook, and it's the best development platform for WebObjects.

Third, I have never had to reboot the operating system to clear a file-sharing violation that persisted whenever I tried to move a folder.

Thus, it is the best development platform around.

That's why I bought it, and that's why I continue to use it daily.

Take a look again

when Mac OS X client comes out and see what's been cleaned up.
Todd Blanchard
Chief technology architect
eTranslate Inc.
San Francisco

Near-death story was true to life

ITHOROUGHLY enjoyed reading Leslie Goff's feature "Consulting's Near-Death Experiences" [Business, April 26].

We've all had them, and I think she did a great job of interviewing to draw those experiences and lessons out of her subjects.

Thanks.
Randy Woodhead
Fayetteville, Ga.
woodhead@usa.net

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at dmoschella@earthlink.net



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DAVID FOOTE

Info age labor, tax laws needed

ALL THE HOOPLA surrounding Microsoft's antitrust suit has overshadowed its other landmark case — the long-running class-action feud with its long-term temporary IT employees, known as permatemps, over equitable treatment.

It's not just the software titan that's having problems in this area, but scores of companies ranging from Time Warner to a tiny Colorado newspaper. In fact, established unions are actively organizing IT workers to help them get fair pay, stock options and improved working conditions.

Just avaricious employers and neglected workers fighting for their share of the pie, you say? If it were only that simple. No, this is a much larger and deadly serious fundamental issue of out-of-date labor and tax laws.



DAVID FOOTE is managing partner of Foote Partners LLC and research director at Foote Research Group, both located in Stamford, Conn. Contact him at dfoote@crumandfoote.com.

At issue is the classification of full-time, contract and temporary workers and the determination criteria used by the Department of Labor, the Internal Revenue Service, the Equal Employment Opportunity Commission and the National Labor Relations Board. The courts for years have been

sorting out the employer requirements for providing health and retirement benefits, paying taxes, eliminating discrimination and managing numerous other employment practices.

The difference as we enter a digital millennium is focus and priority. Concerns regarding unions and employer/employee rights remain vitally important, but we're now up against a new bogeyman: the specter of how to field high-performance teams of IT workers to tackle the enormous challenges of building the new information economy and maintaining America's competitive edge.

Even if the supply of skills were bottomless, traditional organizational models that emphasize full-time workers won't cut it. The pace of change is too extreme, ambiguities too confusing and the variables too unpredictable to expect enough skilled IT employees to repeatedly reinvent themselves to adjust to constant change. Needed are fast, flexible and adaptive collections of workers with diverse abilities who are able to turn on a dime and produce results again and again.

We'll find this in well-managed, motivated corporate workforces that combine permanent employees, consultants, contractors, job sharers, interns, part-timers and nontraditional types. An

adaptive workforce won't come about with old management thinking and the rag-tag reactive tactics employed today by companies just trying to keep up. Companies won't be able to proactively develop and sustain the flexible workforce our economy needs until the feds and state governments make landmark revisions to our labor laws and tax codes, removing barriers while creating incentives to make better use of the 11 million permatemps and independent contractors who now compose nearly 9% of the U.S. workforce.

We'd be wiser to encourage legislative debate and legal reforms, not years of court battles, aimed at the following:

- Boosting productivity and economic competitiveness without tripping over old issues like overtime pay, work hours and Eisenhower-era labor union concerns.

- Providing more parity in benefits between full-timers and permatemps, including stock options, retirement plans, health insurance and working conditions.

- Focusing employment classification criteria more on the worker value-add and less on work hours and service length.

The fair treatment of various classes of employees may appear to be a labor issue, but it's really a business and global economics issue at the heart. That's why the Department of Commerce's Office of Technology Policy is studying those issues and why business executives should encourage Congress to act. ■

JOHN GANTZ

PC power crunch on the horizon

IF YOU'RE a volume buyer of PCs and have been watching the ongoing PC

price wars, I bet you think you'll finally be able to buy systems that will have the power and storage to last a full depreciation cycle without an upgrade — especially if you aren't jumping into Windows 2000 right away. Price performance has been going through the roof. How can a corporate PC user even use up all the memory and processing speed you can buy today for \$1,500? And, anyway, isn't everyone going to be computing on Web-based servers?

I've got bad news for you.

In research my team conducted this spring on PC applications and configurations, we discovered that all the increased power and speed that Moore's Law will bring us in the next three years will get eaten up and then some by new applica-

tions and processing functions.

At the heart of our research was a survey of MIS managers and PC users at 850 large and mid-size U.S. organizations. The group as a whole expected (as Moore's Law would dictate) to about double the power and speed of their average system over the next 18 months, from 322 MHz and 73M bytes of RAM to 640 MHz and 188M bytes of RAM.

Unfortunately, the users we classified as "advanced" were way ahead of this curve — expecting even more rapid expansion of their systems. They're already replacing the systems every 18 to 24 months. In research circles, we consider the behavior of advanced users more indicative of the future than the expectations of average users.

Driving this demand for capacity and power in corporate PCs — besides Windows 2000 — will be new applications and background processing tasks. Advanced users are already well into streaming video applications (40%) and 3-D graphics (60%), for example. They also see lots of value in other power-hungry applications, such as encryption, Web-based training, unified messaging and video conferencing and playback. And, they'll be running more PC-resident systems management software as part of cutting down total cost of ownership.

You might think you wouldn't have to worry about whether your company's end users have fully configured high-power PCs or not. Let them do with less, if it saves the organization \$500 per seat. Why shouldn't you take advantage of sub-\$1,000 commercial PCs?

The problem is that a lot of these users are now running bits and pieces of mission-critical — or at least business-important — applications, like sales force automation and enterprise resource planning. So their time and the uptime of their systems are more important than they were when users used only word processors and spreadsheets.

In a related vein, we quantified the penalty one pays for buying wimpy systems. The incremental hard cost of replacing a standard PC at a typical company six months before planned is \$980 in disposal, installation and depreciation. The soft cost — in end-user productivity — is two and a half times that. These costs, by the way, don't count the value of what the user was actually doing with his PC — for example, booking orders or sending invoices.

Even those of you who subscribe to the vision that sooner or later most of today's computing will take place on Web servers will be surprised at how little that will free up your PCs. Yes, lots of application logic and content management will run on the server, but the PCs will have to handle local caching, more encryption and more complex user interfaces. The software client may be "thin," but hardware isn't.

I have always felt that in the never-ending battle between the end user wanting more power on his desk and corporations wanting to limit costs, companies tend to be penny-wise and pound-foolish. I think PC performance is like beer — you can't overbuy. ■



JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at jgantz@idcresearch.com.

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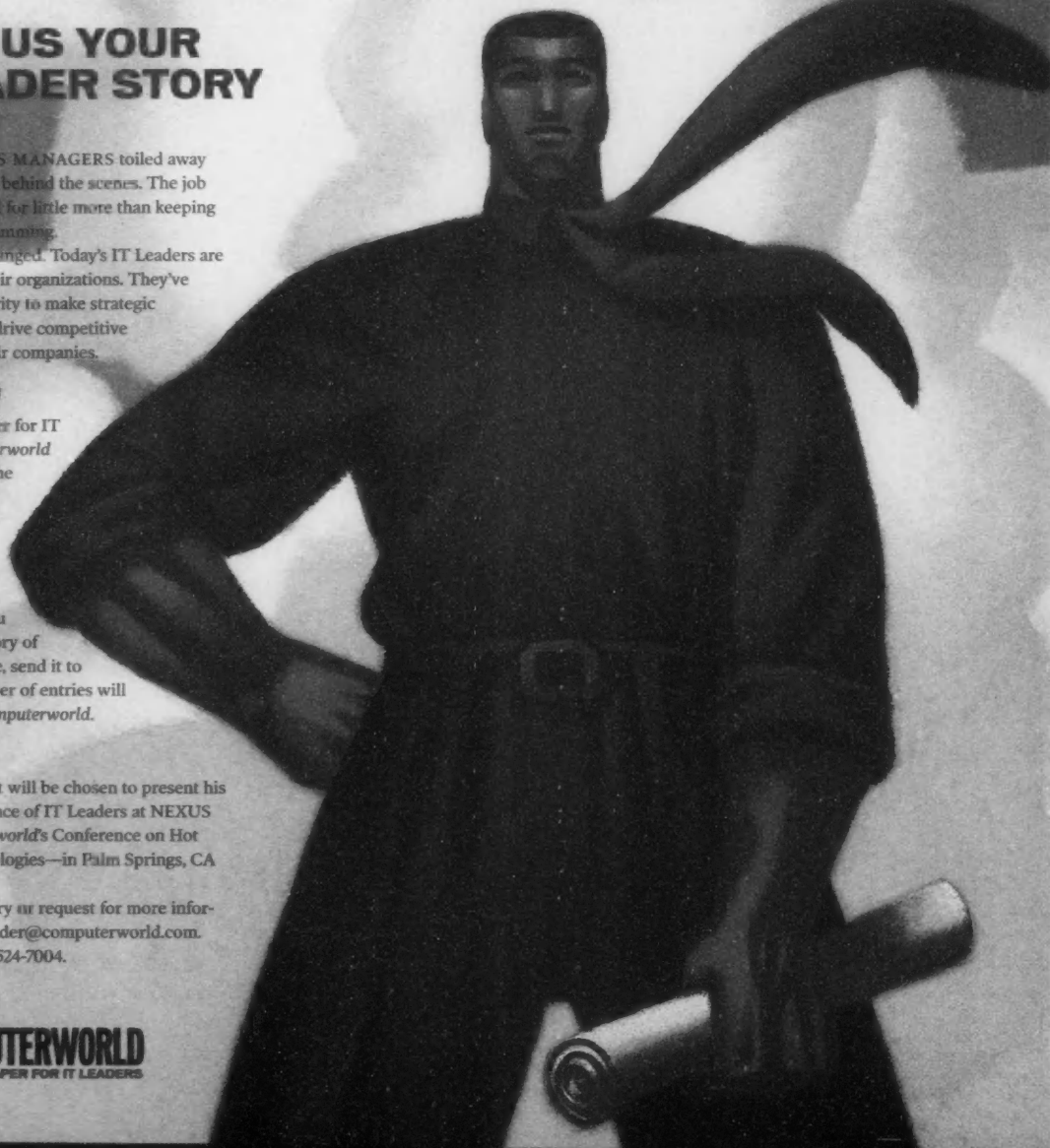
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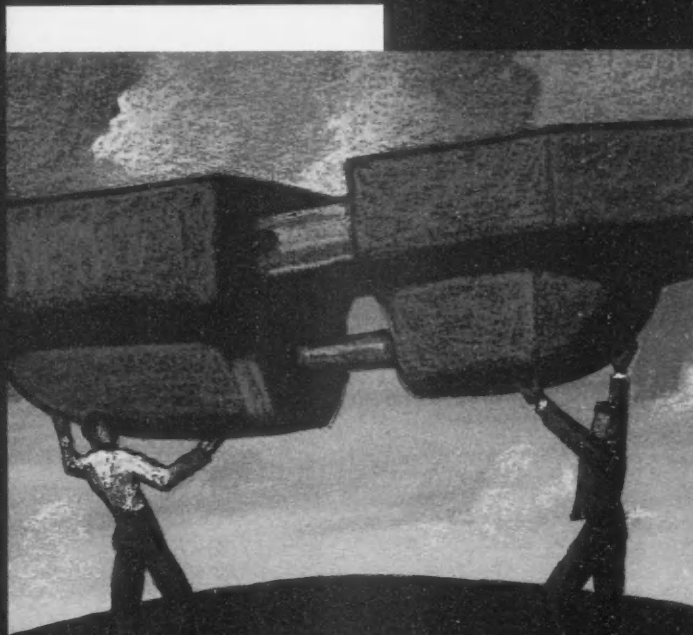
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Xerox Corp. discovered the power of this concept in the late 1980s. After conducting a productivity study based on a conventional model of efficiency, the corporation closed field service offices in order to force its technicians to spend more time with customers. However, subsequent productivity reviews showed that although the technicians were logging more customer visits, they were having to go back numerous times to fix the same problem. In short, the technicians were no longer able to share learning back in the office.

Here is where two important things happened. The first was that, rather than shying away from the failure of the first initiative, Xerox management learned from it and built a system that was even better than the local service office model. This was the Eureka system, which electronically gathers and shares tips for service reps worldwide. The second was that with Eureka, Xerox treated the service division as one global community, not a collection of local groups.

Eureka has dramatically improved the learning potential of each individual service rep. Although Eureka was not piloted until 1996 and has only been rolled out to half of Xerox's 20,000 technicians worldwide, Xerox has publicly stated savings of 5-10%, which translates into \$30 million over time. These impressive savings are just the tip of the iceberg, because the power of knowledge sharing has only been applied to the field service organization. Xerox is beginning to allow access to Eureka to several other departments, namely, product documentation and product engineering.

Each of these communities has its own internal culture. The field reps value the ability to tap into the collective knowledge of their peers and like knowing that their learning is used by others. The way they use Eureka is unique—they search on or submit tips at the deepest level of granularity. Documentation specialists look at Eureka differently; they need higher level views to see trends in the tip database, and probably will establish their own way of formalizing tips directly into product documentation. The engineering group will use the system to uncover issues such as design flaws and low-quality parts

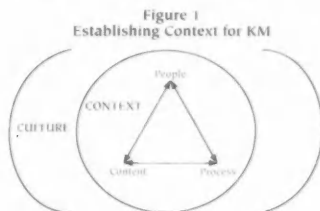
By
Gerry Murray
IDC

Gerry Murray is the Director of Knowledge Management research at International Data Corp., an IT market research and consulting firm with more than 500 analysts in 42 countries. He has just completed a six-month evaluation of the knowledge management market and published his findings in a 275-page report entitled *Sourcebook for Knowledge Superconductivity*. He provides market insight to product and service vendors, systems integrators, VARs and investment firms. He can be reached via email at: gmurray@idc.com

manufacturing, then accordingly incorporate changes into their engineering processes or sourcing strategies.

Context: the knowledge superconductor

The three departments mentioned above are examples of disconnected communities that could each use the same knowledge base in different ways, because they each have unique contexts for its use. The three main components of a business context are People, Process and Content. The interaction between these three resources is what estab-

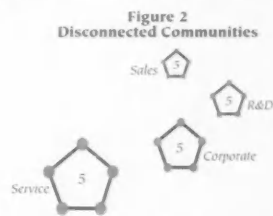


Source: International Data Corporation, 1999

lishes a context. As depicted in Fig. 1, all this takes place in the larger framework of the overall corporate culture, which determines whether people can do the right thing when the right information gets to them at the right time. The key to connecting continuities is understanding which context elements they have in common. In the case of the Eureka system, it is product performance information. Making these connections come alive is the role of knowl-

edge management (KM) systems.

The value of knowledge sharing is shown in Figs. 2 and 3. For the sake of simplicity, consider four departments, all with their own intranet being used by five employees each. To put a value on the organizational knowledge base created by these separated departments, we'll use Metcalfe's Law, which states that the value of a network is propor-



Source: International Data Corporation, 1999

tional to the square of the number of users. Thus, the *realized value* of the knowledge base is $5^2 + 5^2 + 5^2 + 5^2$ or 100. With this approach, we have created pockets of knowledge sharing, but we have prevented the organization at large from achieving a much greater potential for learning.

When we connect these communities, we increase the theoretical value of the knowledge base by a factor of four (the number of separate communities in the fragmented model). The *potential value* of the knowledge base is $(5 + 5 + 5 + 5)^2$ or 400. In this model, the cumulative wisdom of the organization as a whole is available to every

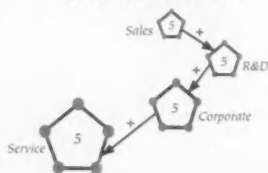


employee, and, by association, to every customer as well.

Thus the first law of knowledge bases: *The value of a knowledge base is equal to the square of the number of users divided by the number of disconnected communities, where:*

1. The knowledge base incorporates all information systems and sources (internal/external, digital/non-digital).
2. Users include not only employees, but also partners, customers, consultants, etc.
3. Communities are any subset of employees, partners and/or customers. They can be grouped and counted by workgroup, department, domain, database, discussion group, etc.

Figure 3
Connected Communities



Source: International Data Corporation, 1999

Admittedly, this is a purely academic view of the world. However, it is a valuable proxy for the cost of fragmentation and lack of coordination across companies. Reducing this cost and providing a solution that fosters innovation is the role of knowledge management.

This White Paper has been excerpted from IDC's evaluation of more than 40 knowledge management (KM) product and service providers and their customers. The findings of this research is available in a 40-page excerpt that differentiates KM product and service categories; segments types of corporate portals; examines the technical and organizational implications of knowledge sharing; and illustrates the path from traditional IT approaches to knowledge-oriented systems. Copies of the report can be ordered by calling (508) 933-4219.

Implementing knowledge management

IDC's report on current KM products concludes that there are ten capabilities that distinguish the knowledge contenders from the pretenders. These are:

1. **Taxonomies.** These hierarchies of word meanings, data labels and the associations between them are critical to maintaining the currency of the knowledge repository, and act as a reference for tagging new information objects. The importance of taxonomies is driving the widespread adoption of XML across the IT industry.
2. **Categorization** refers to the standard tagging of information objects with the taxonomy hierarchy in realtime. A typical categorization application would be tagging news feeds with proprietary internal attributes, in order to ensure the proper distribution of those objects through the organization.
3. **Inferencing.** The automated engine for associating objects within and across structured and unstructured repositories, inferencing is typically based on usage patterns, so when a given set of information is accessed, additional information that often accompanies that set can be delivered or offered to the user automatically.
4. **Contextualization:** the process of attaching meta data to information objects pertaining to the business environment in which they are created and used. This can take

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the form of shared project folders to more advanced "intelligent" objects that acquire attributes regardless of where they go in an organization.

5. *Expertise networking* helps one find the best source of expertise available to the company on a particular subject. Experts can be identified by subscription and skill inventories, participation in past project teams, or tracking contributions to the knowledge base.
6. *Dynamic user profiling*: collection and administration of information on employees such as job title, department, inventories of skills, areas of expertise, authorship/contribution history, security privileges, role in process, etc. Profiles must update automatically and provide tiered security for profile information.
7. *Linguistic analysis* refers to the algorithmic breakdown of existing full text indexed repositories on the basis of word meanings and associations at document, repository and global levels. It should include thesauri, word stemming, inflection, compound word, phrase analysis and industry-specific filters to facilitate deployment of the engine.
8. *Natural language queries* enable users to ask questions of the system in much the same way they would ask one another, i.e., "Tell me what we know about polymer analysis and injection molding." Multiple language support is critical to global scale.
9. *Multiple languages*: Communities obviously transcend national, ethnic and linguistic borders. Therefore, translations, query interpretation, taxonomy management,

etc., must support major languages to be truly effective for global organizations.

10. *Personalization*. Every employee can potentially be offered a unique web page, or desktop portal, to the same organizational knowledge base.

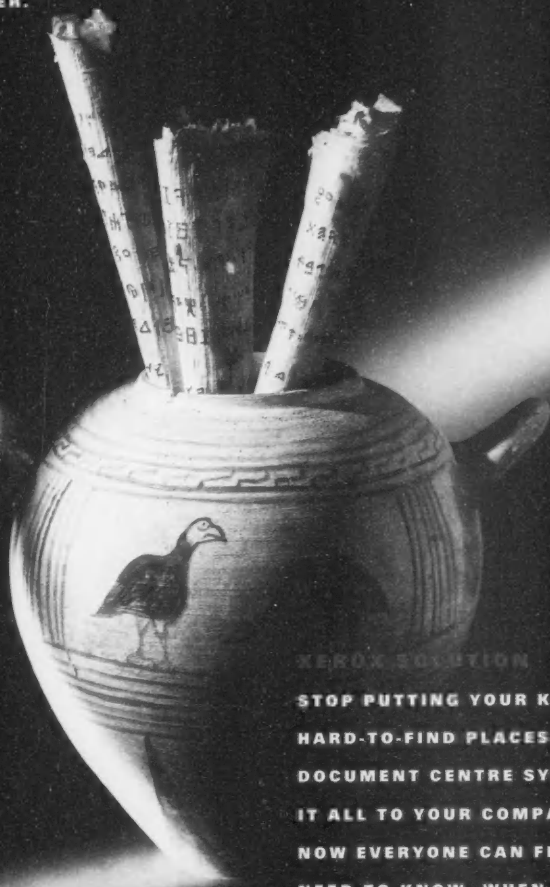
With new capabilities to "read," classify, tag and associate everything employees do, aren't we crossing a cultural barrier for knowledge sharing? Is this Big Brother incarnate? No. We are moving to a model of computing that IDC calls "private content, public concept." This model allows privacy at any level, from individual to department. The key to linking communities is not riding roughshod over privacy. This new model will allow the organization as a whole to connect you and your team to others on the basis of what you are working on at a conceptual level.

Conclusion

Many companies are now claiming to fulfill a great deal of this vision for connecting communities through so-called "enterprise portals." However, most of these are, in fact, simply new Web interfaces to existing data and text processing applications. Customers should be careful that the Web interfaces they bolt onto their processing systems and repositories do more than just re-create silos of information and expertise on their intranets.

Instead, customers should focus on connecting communities through technology that provides knowledge management functionality. This way, each departmental community can be easily linked down the road, and the rate of innovation throughout the organization will accelerate.

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BUSINESS

THE IT EDGE

Regulations keeping banks and insurance firms out of each other's back yards continue to fall, and IT is the key to new business. Insurers trail banks but may get an edge using data that banks just toss out. **► 54**

HOT SKILLS

Our experts lay out what skills and tools are hot right now in Internet, database, networking and app development — and also what are the best combinations. **► 63**

SELLING DATA SAFELY

U.S. Bancorp faces a lawsuit alleging it sold customer data improperly. PricewaterhouseCoopers now offers a service to "scrub" sensitive data from customer databases, reducing the risk for companies with lists to sell. **► 45**

WILL LAW LOWER Y2K URGENCY?

Year 2000 legislation that will keep you from getting sued for 90 days is a good thing, right? Wrong, argues Ed Yourdon, who worries that it will make the bean counters complacent and slow expensive remediation projects. **► 60**

Y2K LAGGARDS

Only a small fraction of banks are rated unsatisfactory on the FDIC's Y2K-compliance sheets. But the agency is requiring laggards to keep backups to make sure

nothing is lost in the transition to 2000. **► 47**

RENTABLE SOFTWARE

Big hardware makers are pushing products to help software vendors offer application-for-rent services. Analysts expect lots of users to outsource e-mail and other apps, but so far most new outsourcing involves Web-site hosting. **► 49**

ANALYZING IT ROI

Only accountants should worry about the return an investment should deliver, right? What if the investment is in a big IT project you're pitching? Then analysis helps you. Business QuickStudy. **► 72**

CONTRACTOR RIGHTS

Contractors are entitled to specific benefits, but those vary depending on your contract. We had some experienced contractors give us the low-down on the rights, rules and obligations. **► 68**

'PUSH' WARNINGS

"Push" technology is no longer the hottest thing on the Net. But one oil company found it's a good way to get maintenance updates out to its worldwide sites to cut down on repeat structural failures. **► 52**

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COKE'S DON HODSON has helped gas stations and supermarkets sell more of everything

COKE HELPS GROCERS SELL

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70



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Consultancy Readies Customer Data for Sale

Strips out sensitive information, legalizing sales to marketers

BY JULIA KING

A LAWSUIT FILED against U.S. Bancorp in Minneapolis for allegedly selling sensitive data about hundreds of thousands of its customers to telemarketers is expected to boost the nascent market for third-party information scrubbing and banking services.

Consulting firm PricewaterhouseCoopers said it already receives more than a dozen calls each day from financial services, pharmaceutical and other companies with large amounts of customer data to

sell. They want to know how to do so legally.

Selling customer data isn't illegal. Banks, credit-card issuers and other large companies have been selling certain kinds of customer data for more than a decade. Federal law prohibits banks only from selling information obtained from a third party, such as a credit-reporting agency [CW, June 14].

"But most companies don't understand all of the rules and intricacies around aggregating data and the reporting [to federal regulatory agencies] that is required" to sell data legally,

said Larry Ponemon, managing partner at PricewaterhouseCoopers' privacy risk management unit.

The PricewaterhouseCoopers remedy is a data-scrubbing service that prepares data for sale by stripping out sensitive — and illegal to transfer — information, such as customers' names and Social Security numbers, before returning it to corporate clients.

The information that remains is still valuable to direct marketers, which are primarily looking to establish buying patterns, Ponemon said.

As part of its service, Price-

waterhouseCoopers also acts as traffic cop: It guards against the wrongful release of information by tracking and complying with all local, national and international data-privacy regulations in much the same way accounting firms vet their clients' financial records to comply with complex tax rules.

Maze of Legality

The idea behind the service is that the various regulations are too numerous and complex for companies to track and obey on their own.

In the U.S. Bancorp case, the Minnesota attorney general's office accused it of violating the Fair Credit Reporting Act by revealing confidential customer data to Stamford, Conn.-based MemberWorks Inc., a direct-marketing company.

Earlier this month, U.S. Bancorp acknowledged that it had identified potential customers for MemberWorks.

In the wake of the U.S. Ban-

How It Works:

Companies electronically transmit customer data to PricewaterhouseCoopers

It strips out sensitive information, compiles the remaining data and returns the sanitized files to its clients

Large client companies pay a per-transaction fee for the service. Monthly totals range from several hundred thousand dollars to several million dollars.

corp case and the general surge in online data, "we expect all industries that use this data are going to come under more pressure and scrutiny," said Michele Slack, an analyst at Jupiter Communications Inc. in New York. ■

Auto Dealers Consider Online Customer Service Option

Interval to offer personalized Web pages for new-car buyers, but dealers must have sites

BY BOB WALLACE

Claiming that new-car dealers need to work on post-sale support, Interval Inc. next month will launch a Web-based service designed to strengthen the links between dealers and their customers.

For a fee, the Santa Monica, Calif.-based company will develop, update and maintain personalized Web pages for each of a dealer's new-car owners using data from the dealership's customer information database.

New-car owners will be able to access their sites and add specific data such as miles driven. The data will be used to generate e-mail when it's time for service — which can be booked online — along with vehicle-specific pricing.

The site will provide users with an online record of their vehicle's maintenance and alert users to service specials, sales promotions and recall notices.

"We want to make the vehicle-ownership experience more convenient, economical and en-

joyable," said Interval President Michael Moskowitz. Dealers struggle with post-sale customer relations and rely primarily on direct mail to alert customers to the service and marketing information that the Web page would handle, he added.

Interval's service is part of a trend among high-tech vendors to help companies better equip their Web sites to provide more focused post-sale customer service.

Interval's personalized page service will have one, key limitation: It will be accessed through a link on the dealer's Web site, but just 61% of auto dealers have Web sites, according to the latest research from the National Automobile Dealers Association (NADA), a McLean, Va., group that represents 19,500 new-car dealers in the U.S.

"Dealers that do have Web sites need to look at every op-

portunity to boost customer service," said a NADA spokesman.

He added that vendors like Interval have to make a solid business case for their offerings to dealers so that it's very

portant to boost customer service," said David Abatsis, owner of Acton Ford in Acton, Mass. Abatsis' business has a Web site and will soon be able to communicate with customers via e-mail if customers prefer that option to direct mail. "I don't see the benefit [of Interval's Web service]. We already handle customer service through our Web site," he said.

Interval faces stiff competition in some areas. Independent, online car-shopping service powerhouses such as Microsoft Corp.'s CarPoint and Autobytel.com Inc. already offer personalized pages to car owners without requiring them to link through a dealer's site, said Chris DeNove, an analyst at J. D. Power and Associates in Agoura Hills, Calif.

Although hosted Web pages like those of CarPoint and Autobytel.com aren't linked to dealers, they provide many of the services Interval will provide, such as service reminders via e-mail, and some services Interval won't offer, such as the current value of the vehicle. ■



ACTON FORD'S DAVID ABATIS: "We already handle customer service through our Web site"

clear how the dealer will benefit. Interval also would be well-advised to stress that it keeps customer data — the dealer's most valuable asset — private and protected.

"My chief concern is providing anyone access to my inter-

Insurers Lag In Online Offerings

KATHLEEN OHLSEN

Most insurance firms are lagging behind their financial market counterparts in online offerings, which could reduce insurers' market share, according to a survey by Booz Allen & Hamilton Inc.

Insurance companies said their Internet and corporate strategies are directly linked, but more than half of them are spending less than \$500,000 per year on Web capabilities, the survey said.

Out of the 150 companies surveyed, 60% don't plan to sell insurance on the Internet in the next two years, and 67% said they would never sell an annuity online.

Part of the problem is that insurers store information on separate legacy systems, and it's difficult to consolidate those views in real time for customers, said Gil Irwin, a Booz Allen vice president. ■

MORE THIS ISSUE

Financial firms of all types are using IT to support business initiatives. See page 54.

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FDIC Calls for Y2K Safety Net

Banks that aren't 'satisfactory' will need a standardized backup

BY STACY COLLETT

CREATING its own year 2000 insurance policy, the Federal Deposit Insurance Corp. will require banks that are still lagging behind in Y2K readiness on July 31 to create a standardized backup of all deposit and loan information.

Officials said the new rule affects 209 large and small

banks that are currently not rated "Y2K satisfactory" by federal regulators. Standardized backups will give the bank insurer a quick way to gather data if a bank's systems fail.

"For us to keep [insuring those banks], we have to have some data that is not corrupted that we can use to reconstruct or pass to a new purchaser of the bank," said Mitchell Glassman, deputy director of FDIC

operations in Washington.

The banks will have to create an ASCII file with standard data fields for deposit and loan account information, according to James Crum, FDIC manager of information systems.

All banks have backup programs, but in many cases, an institution's data can be recovered only by that institution's systems. If a bank's systems failed, considerable time and

manpower would be needed to convert the data for use on another system, Crum said.

"It's clear that a small proportion of banks will not make it, so the question becomes, What does [the FDIC] do, and what's the best way to handle it?" said Octavio Marenzi, an analyst at Meridian Research Inc. in Newton, Mass.

The FDIC estimates that it will take up to 400 hours for banks to back up systems and that it will cost about \$190,000 each for institutions with more than \$1 billion in assets.

Some industry observers said the time and money could be better spent on Y2K compliance. "It sounds like what it takes to create this backup is probably bigger than fixing the problem," said Bob Landry, an

Ready or Not

FDIC members' year 2000 readiness

98% **2%**
SATISFACTORY UNSATISFACTORY
Total members: 10,461

analyst at TowerGroup in Needham, Mass. "It's comparable to creating an entire [system] conversion."

Former Wells Fargo Bank CIO Barry Lynn said he's skeptical about the usefulness of the backups but understands the FDIC's precautions.

"But frankly, I don't think it really accomplishes that much," Lynn said. ▀

De Jager: Lighten Up on Y2K

A well-known doomsayer changes his tune

Peter de Jager has publicized the dangers of the year 2000 problem so widely, his name is associated with the threat. Now he's self-publishing a 192-page book of humor and cartoons about Y2K called *The Bug Stops Here!!*. Reporter Matt Hamblen asked de Jager about his change in direction.

Q: Why do you think humor is the correct response right now?

A: It's not that the problem has diminished, it's that the

end-of-the-earth-as-we-know-it crowd has basically blown this thing into the utter stratosphere, and for no reason. I'm sorry, but I don't believe the power will go out forever, and the time has come to poke at the nonsense.

This is the biggest, dumbest, most stupid blunder in the history of technology, and if we can't find humor in that, then we've lost. If you lose your sense of humor, you've lost.

For the most part, we've

done what we're supposed to do to fix the problem, and it's time to lighten up.

Q: So what problems will materialize Jan. 1?

A: I'm not sending an all-clear, and there's still a tremendous amount of work. Some large corporations will be dead in the water for a couple of days or two weeks. Some corporations will have serious problems in inventory and control and management and reporting, and overseas problems will impact assembly lines.

But society won't fall apart.

there won't be rioting in the streets. On a personal level, you need to prepare for this just the same way you do for a winter ice storm that lasts two

weeks. I'll be flying that night from Chicago O'Hare to London Heathrow.

Q: Last year, U.S. government officials often talked about the need to not panic the public over Y2K.

A: Yes, if [the] government had been diligent in 1994, we wouldn't have to worry about panic. If we all had done our job in the beginning, we wouldn't have to inform the

public. And the media has done a lousy job... This isn't just the Michelangelo virus.

Q: Why did that enormous oversight happen?

A: Because the problem is incredible, beyond credulity and incredulosity. It's so hard for people to understand how an enormous industry that charges a lot of money for software could have done such an incredibly bad job with this. And that sorting out of who's to blame starts in earnest next year. One of the cartoons in the book says, "The time has passed for awareness. It is now time for pointless finger-pointing." There will be a lot of that going on. ▀



PETER DE JAGER:
"Society won't fall apart"

this just in: the gold medal goes to Compaqtru64 UNIX on Alpha Server DS20 which runs Java apps 62% faster than Sun Solaris

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Q www.compaq.com/nonstopfacts

TECHNOLOGY BRIEF

Assuring Year 2000 Applications: Hope for the best, but protect against the worst

The date turnover at the end of 1999 heralds the most publicized concern over software bugs. Despite major efforts by developers to find and remove these bugs, key concerns remain for IT administrators. What if developers miss a bug? What if they fix one, but later the fix is accidentally removed? Did the developers really know how to test the whole system in production? How can you recover if a bug still occurs?

The real y2k risk is that some bugs will remain hidden, even in newly deployed converted applications. While most of us assume that y2k problems will occur in the early morning hours of Jan. 1, 2000, this is not necessarily the case. The use of time and dates in applications is broad, ranging from billing computations to scheduling of internal jobs. Since failures occur as algorithms that use dates are affected, they can happen as the date change approaches, and for some time after the date change.

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For more than 18 years, the largest companies have relied on BMC Software to provide management solutions that ensure the availability, performance and recovery of their business-critical applications. BMC calls this *application service assurance (ASA)*, and it means that the applications companies and their customers rely on stay up and running, around the clock.

Having completed acquisitions of Boole & Babbage and New Dimension Software, BMC is leveraging the collective strengths of the combined companies to create a new market leader that assures business availability by effectively managing the service delivered by business-critical applications.

BMC Software is headquartered in Houston. For more information, visit BMC's Web site at www.bmc.com, or call (800) 841-2031 or (713) 918-8800.

To combat this problem, IT administrators can either continually monitor newly revised applications in production to detect failures early enough so they can fix them before an application goes down, or use application-level backup and recovery strategies to rapidly recover the system should it fail.

In a corporate y2k strategy, three traditional IT management disciplines—availability monitoring, performance monitoring and recovery management—can serve as a safety net. The philosophy is a pragmatic one: Hope for the best but protect against the worst. Assume that not all applications will be correctly remediated and re-deployed, and that those that are will still have a few y2k bugs in them.

To prevent the availability and performance problems that IT administrators have come to dread, BMC Software offers storage and recovery management, application service management, IT process automation and data management solutions. These solutions will reduce application vulnerability at the millennium date changeover, and will provide assurance in the years beyond, since they are not specific to y2k problems.

During the y2k vulnerability period, IT administrators must: 1) detect problems early with availability and performance; 2) diagnose the cause of problems; 3) receive notification of problems; 4) correct the problems (automated or assisted by IT staff); and 5) achieve full-scale recovery if the worst occurs. These disciplines are the bread and butter of BMC solutions, which include PATROL, COMMAND/POST, BEST/1 AND SQL BackTrack.

PATROL detects problems, diagnoses their location, and then either attempts automated correction via recovery actions, or notifies administrators.

Knowledge modules in PATROL monitor for errors and availability problems across all

layers of the technology stack: the network, operating system, database, middleware and application.

BEST/1 continuously monitors and analyzes performance levels across the technology stack. Its predictive modeling capabilities can also be used to test that newly deployed y2k-compliant applications will be able to handle load as user and transaction levels increase.

SQL-BackTrack provides application-

Excerpted from a White Paper by Dr. David Spuler, director of advanced research at BMC Software. He has authored books and articles on application management and PATROL.

level backup and recovery. Unlike simple file recovery tools, it has knowledge of database tables and schemas, and can intelligently recover a downed application to a point in time.

COMMAND/POST provides a high-level approach to managing y2k alarms. It consolidates all sources of alarm feeds. All events and alerts are centralized and can be prioritized, filtered and assigned to administrators.

Time is not on your side

The main difficulty pertaining to the use of y2k risk mitigation solutions is one of time. Since y2k problems may arise at any time from now on, the need for risk reduction is already upon us. It's already mid-1999—too late to begin a large-scale framework rollout.

For companies that need to add a safety net at the very last minute, rapid deployment is a must. But even for rapidly deployed management solutions, IT administrators should prioritize which y2k applications are the biggest risks and are the most critical. Fortunately, prioritization of where to deploy products should be easy. It's probably already been done, since developers had to prioritize which applications they would convert first. So apply the solutions to the most business-critical applications. Start with those that need the highest availability and best performance.

There will still be a need for application availability and performance in years to come. The solutions discussed above in this article are not targeted at y2k problems, but they offer invaluable support for them. Once deployed, these products will not only help administrators deal with y2k-related bugs, but will continue to provide assurance of application viability for years to come.

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In a corporate y2k strategy,
three IT management
disciplines can serve
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On Tues., June 29th, BMC Software and *Computerworld* will host a hour-long teleseminar on Enterprise-Wide Year 2000 Assurance. The seminar will take place from 1:00 pm CST to 2:00 pm CST.

The call will be strictly limited to the first 500 registrants. Registrants who are unable to listen in on the call will be sent a free tape recording of the teleseminar. All registrants will also receive a free copy of a BMC White Paper on enterprise-wide backup and recovery strategies, entitled *Assuring Year 2000 Applications: Hope for the best but protect against the worst*.

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Big Names Jump on App Rental Bandwagon

IBM, Sun, HP offer flurry of services

BY JAIKUMAR VIJAYAN

HARDWARE makers are joining the horde of vendors betting that future users will increasingly want to rent rather than own many core applications. But there's little sign yet that users, especially larger ones, have started doing that in any widespread manner.

That isn't stopping a growing number of vendors — including Internet service providers, telecommunications companies, application hosting services and hardware sellers — from taking advantage of Internet and browser-based application access technologies to pitch hosting services.

"It is like a utility model, where you can get an application for a certain transaction fee," said Gopi Bala, an analyst at The Yankee Group in Boston.

The latest to stake out the market are hardware vendors like IBM, Sun Microsystems Inc. and Hewlett-Packard Co., which are rushing to market technologies and programs that let service providers offer services that range from basic e-mail and Web hosting to net-

work management outsourcing and enterprise application hosting via the Internet (see chart). Currently, the greatest use appears to be in outsourcing the hosting and management of e-commerce sites — just what Boston-based Goldhirsh Group Inc., publisher of Inc. magazine, did last year.

"Third parties have the skills and products, but most important, the bandwidth and the monitoring services," said Matthew Berk, vice president of technology at Inc.com, a subsidiary of Inc.

Similarly, Cleveland-based KeyCorp will launch an e-commerce portal site to let its

400,000 small and midsize business customers in 14 states create Web storefronts to conduct secure, business-to-business e-commerce [CW, June 14].

Making it possible is an application hosting vendor — Econex Inc., partly owned by KeyCorp — that will host the applications, hardware, software and network bandwidth, said Mickey Mencin, a marketing director at KeyCorp.

"Right now, [Internet application hosting] is a push-based market. ... Vendors are out there in front saying, 'Hey, this

really is a great idea. It can solve a lot of your problems,'" said Thomas Kucharvy, president of Summit Strategies Inc. in Boston.

"Customers are feeling the pain" of high-technology ownership costs, he said, "but there isn't a widespread awareness yet that hosted application services could be an option to consider." ■

May We Be Your Host?

A sampling of vendor moves to tap the application-hosting services market:

VENDOR	PRODUCT/SERVICE	WHAT IT DOES
Sun	ServiceProvider.com	Prepackaged products and services targeted at Internet providers, application service providers and hosting services
Hewlett-Packard	Commerce for the Millennium	Risk-sharing initiative under which HP will front the hardware and software in return for a cut of a service provider's future revenue
IBM	Net.Commerce Hosting Server	Supports the setup of a Web-based rental storefront

Business Rules Can Be Costly Merger Oversight

BY SAMI LAIS
PEBBLE BEACH, CALIF.

It's a sign of today's merger mania: When 100 CIO-level executives met here earlier this month, a hot topic was how to integrate the information systems of two corporations after a merger or acquisition.

U.S. mergers and acquisitions totaled more than \$1 trillion in assets last year, said Bob LaBant, president of conference sponsor Candle Corp.

The faster the systems of two companies are merged, the

smoother the transition will be for their customers, said Don Obert, senior vice president of information processing at Bank of America Corp.

But it isn't easy. Melding two organizations' infrastructures typically involves 15 to 20 separate systems. And technologists may neglect to integrate business rules embedded in the disparate systems — which is a potentially costly mistake, said Judith Hurwitz, president and CEO of Hurwitz Group Inc. in Framingham, Mass.

Those doing the melding may be unaware of business rules important to each system — or even where they are, Hurwitz said. "Some [rules] can be in tables; others are buried in programs," she said, adding that if you find 10, you may miss three.

For example, one organization changed a dozen instances to cut sales commissions from 10% to 9% but missed one instance. That slipup cost the unnamed company \$250 million, Hurwitz said.

One trick is to reuse Y2K code remediation tools, she said. Many companies already are looking to modify those tools so they can find and then standardize business rules.

Of course, acquiring a company doesn't always require merging systems, said Karl Bohnert, associate vice president of systems at Nationwide Insurance Enterprise Agency in Columbus, Ohio. But even then, the acquiring company will want a technology architecture that allows for data warehousing and integration of applications across the company, she said. ■

and the winner in the category of customer satisfaction by a UNIX (the envelope please) is tru64 UNIX by Compaq

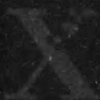
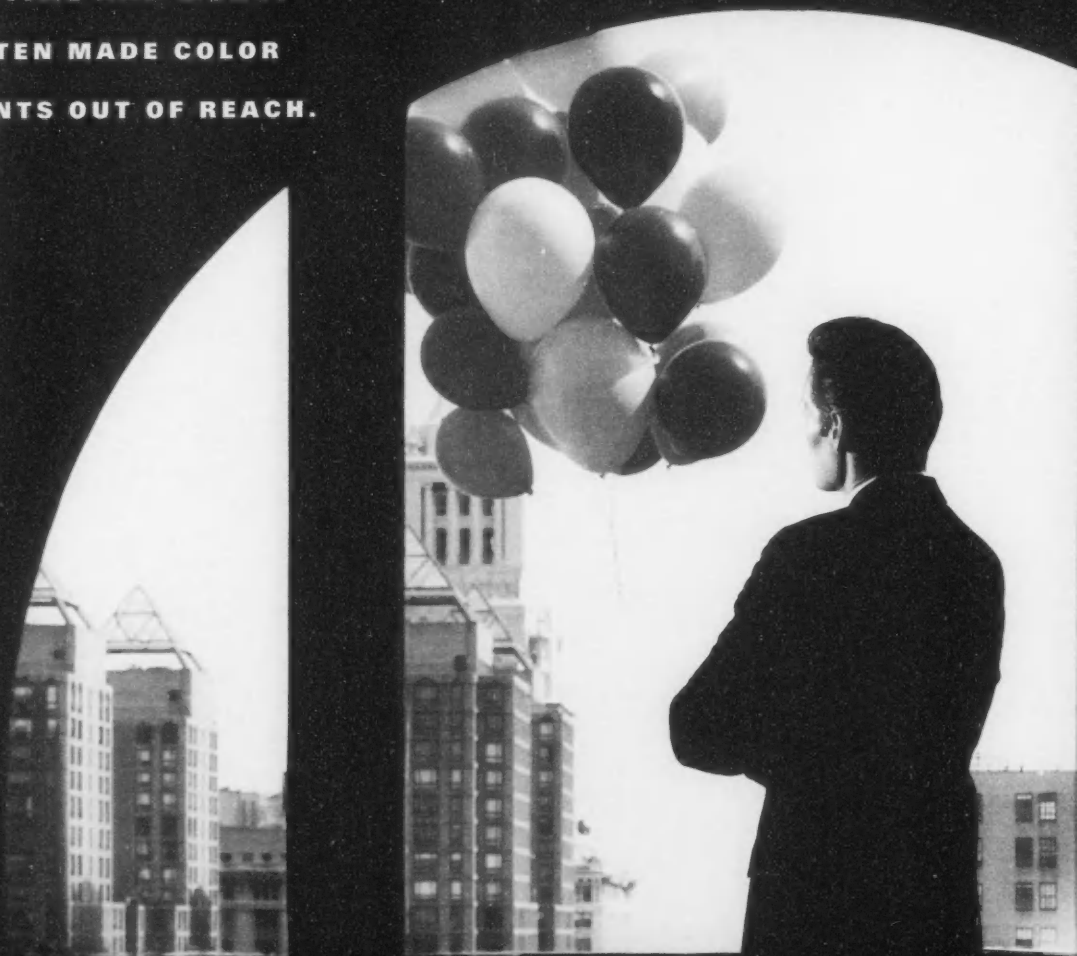
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'Push' Thrives at Some Firms

Niche has faltered, but users find value in BackWeb

BY CAROL SLIWA

JUST HOW FAR out of favor "push" technology has fallen came to light about six weeks ago, when one of the vendors that popularized the phenomenon, PointCast Inc., reportedly sold for \$10 million, a pittance of its onetime alleged worth. But another push vendor, BackWeb Technologies Inc., is finding that its software is gaining a foothold in corporations that need to get business-critical information out to their employees and verify that it gets read.

Dowell, a Sugar Land, Texas-based division of Schlumberger Technology Corp. that cements oil and gas wells around the world, needs to get information about operating failures to field workers in more than 100 countries. Dowell spent about \$400,000 to set up

its BackWeb push system, said Sanjay Dhamija, information technology manager at Dowell. But the payoff could be large.

A field engineer in Brazil recently spotted a pushed report about a tool failure in Indonesia. The engineer was using the same tool, so he made some corrections at his South American site, potentially saving the company upward of \$100,000, Dhamija estimated.

Easy Payback

"It doesn't take many of these to pay for the deployment," Dhamija said. "Our direct objective was to reduce repeated operating failures by half in one year. Frequently, we find that a lot of these failures get repeated simply because there isn't a very efficient way to get the information out to everybody else."

Dowell workers receive the information as soon as they connect to the network. The company currently has 2,200 BackWeb users and hopes to increase that number to 5,000 as more download the BackWeb client to their desktops.

"The biggest issue is that push technology still requires dedicated client software, which means more administrative hassles," said Christopher Selland, an analyst at The Yankee Group in Boston. "Over time, we expect the



CARLSSON'S DESLIE WEBB says BackWeb streamlines processes

browser to become the push 'client,' which should eliminate these concerns."

Carlson Wagonlit Travel in Minneapolis uses BackWeb to push last-minute specials, airline news and other information to its travel agencies. So far, 489 of the company's 1,300 agencies are on board.

"We know through BackWeb exactly who has seen and read the information, which was important to us," said Deslie Webb, CIO at Carlson Leisure Group in Atlanta. Server logs show who has clicked to read the news blasts. "It really streamlines our processes, and it's also very fast and user-friendly." ■

Users Seek to Ease R/3 Support

New software helps end users help themselves

BY CRAIG STEDMAN

For many companies that make it through an installation of SAP R/3, another challenge awaits: how to support end users without breaking the bank on help desk costs or relying on co-workers to guide one another.

Now, some users are pinning their hopes on new software packages that are supposed to provide a repository of instructions on how to enter orders and complete other business transactions in SAP AG's enterprise resource planning system.

For example, Security National Servicing Corp. last week made SAP's InfoDB training and documentation software available to its accounting workers. Justin Kirsch, CIO at the loan servicing firm in Eureka, Calif., said users who get stuck on R/3 transactions should now be able to solve many of the problems themselves.

"We're trying to push people away from [calling technical support for help with R/3]," Kirsch said. Security National already reduced its support staff from six to four workers in anticipation of using InfoDB and another online support package that was installed for its non-R/3 loan-servicing system.

In two weeks, Houston-based Baylor College of Medicine plans to roll out

R/3 to 1,100 workers along with end-user support software from Austin, Texas, start-up Ventix Systems Inc. That's expected to save the school from having to add two more people to its nine-person help desk, said J. Robert Beck, vice president of information technology.

The online help built in to R/3 can direct users to the right application screen for running a transaction, "but that's very different from business-process help," Beck said. Ventix's software will be used to document exactly how the school wants things such as purchase orders to be done, he added.

But all this is very new. Ventix's software, which costs \$50,000 plus \$500 per user, just shipped in March and is in the hands of a dozen companies. SAP has 250 InfoDB users, but most are using the package — renamed Knowledge Warehouse for an upgrade due by September — as a training tool before going live with R/3.

For support, most R/3 buyers now either add help desk staffers trained to handle business questions or rely on expert users to aid other workers, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif.

Software such as Ventix and InfoDB looks like a promising alternative, "but you have to put a lot of information [about your business practices] into it," Greenbaum said. "There's a point at which you have a really effective tool, but you don't start out with that." ■

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As Barriers Fall, IT Keeps Finance Players in the Game

Impending legislation would let banks, insurers compete using similar technology but different ways to handle information

BY THOMAS HOFFMAN

LAST MONTH, the U.S. Senate voted to lift most of the remaining regulatory hurdles from legislation originally passed in 1933 to keep financial services companies from vaulting into other industries.

Though savvy bankers have found ways to circumnavigate many of those regulations over the years, the laws still made it difficult for, say, The Chase Manhattan Bank to acquire Nationwide Insurance Corp. or for Chase to sell its own life insurance directly.

The Senate vote still must be backed up with President Clinton's signature, but the financial services industry's sands are already shifting: Banks and insurance firms are gunning for one another's business.

And full-service brokerages like Merrill Lynch & Co. are trying to sell their investment products to the rest of the world.

Taking the Easy Route

"A lot of these firms are looking to get into these other industries by using an electronic crowbar," said Octavio Marenzi, research director at Meridian Research Inc., a Newton, Mass.-based financial services research firm.

It's much easier and more cost-effective for an insurer to set up an electronic banking arm than to build up a full staff and establish brick-and-mortar bank branches, he added.

The Allstate Corp. is an example of how companies are rolling out information technology infrastructures to support new business initiatives. Before the Northbrook, Ill.-based insurer applied for a thrift charter last July that allowed it to offer bank services in all 50 states, the company hired information technology services vendor Unisys Corp. to help it do everything from applying for the charter to cre-

ating new banking products and services.

But it took an approach different from most banks' to the information managed by its technology, said Gary Cawthorne, general manager of Unisys' North American financial services practice in Blue Bell, Pa.

Disposable Data

Historically, banks have "thrown out" information about why customers bought mortgages or applied for car loans, Cawthorne said.

But insurers like Allstate hoard that type of information, which makes it easier to cross-sell products to customers because "they know when you bought a house or when your kid is ready to go to college," Cawthorne said.

But few insurers to date have truly taken advantage of those cross-industry opportunities.

That's because companies that use a customer data warehouse to try and cross-sell mutual funds to life insurance customers, for example, run the risk of cannibalizing their existing product line, said John Alexander, the former CIO at Unum Corp. who is now the director of the financial services practice at IMRglobal Corp., a Clearwater, Fla., software and services company.

One bank that has had success cross-selling investment products to customers is First Union Corp. in Charlotte, N.C. After the bank acquired Philadelphia-based CoreStates Financial Corp. last year, First Union used its customer data

warehouse to help it identify and cross-sell investment products, such as mutual funds, that CoreStates "didn't have for their customers," said Austin Adams, executive vice president in charge of operations at First Union.

So far, the most successful "transindustry" companies are newcomers like ETrade Group Inc. in Palo Alto, Calif., that aren't held down by "150 years of history" and existing busi-

ness using streaming technologies from Woodland Hills, Calif.-based GEO Interactive and VoiceQuotes.com in New York.

Convenience

The service provides Quick & Reilly's customers with another convenient avenue to get stock quotes.

In turn, the company hopes the service will lead customers to buy and sell more stocks and thus generate higher revenue, said Peter Quick, the company's president.

Quick was unable to quantify any revenue gains that his company has made since it introduced stock quotes via audio a month ago. However, he noted that more than a quarter of Quick & Reilly's revenue is now Internet-driven — an increase from 6% to 8% just 18 months ago.

Meanwhile, full-service brokerages are pumping more money into developing online tools aimed at helping their customers invest smarter.

In 1997, PaineWebber Inc. launched an online account service, called the Edge, for its most affluent clients.

The New York-based broker plans to roll out Version 3



QUICK & REILLY'S PETER QUICK: One quarter of the company's revenue is now driven by the Internet

of that Internet-based system later this summer, according to Robert H. Silver, PaineWebber's executive vice president of operations, services and technology. Its features will include electronic alerts to customers about why they might want to add, for example, Compaq Computer Corp. stock to their portfolio.

The payoff? Investments in those technologies have helped PaineWebber increase its year-to-year client retention rate from 92.5% in 1995 to 96% last year. ■

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Hedging Their Bets Against Web Downtime

Full-service brokerages such as Merrill Lynch used to excuse themselves from the online trading frenzy by pointing to the network reliability and security problems that cyber-brokers like ETrade and Charles Schwab & Co. have endured.

But now that they have given in to the e-pressure, Wall Street's titans are going to have to contend with the same issues — and with fewer answers than they would have hoped for.

"There's only so much you can do" to avoid crashes to online trading systems, said Larry Tabb, an analyst at TowerGroup in Needham, Mass. "You can install additional processing capacity and add [system] redundancy, but it gets to a point where [brokerages] have to determine how much they're willing to invest."

"I've been pleasantly surprised by the robustness" of the online trading system Merrill Lynch has been providing to its most profitable clients since March, said John McKinley, chief technology officer at the New York investment bank, which earlier this month announced plans to introduce low-cost online trading.

McKinley conceded that the main reason the brokerage is waiting until December to launch the service is that it wants to "make sure we have the business and technology infrastructures in place to support" several million customers. That includes making sure it has everything from reliable networks to beefing up its call center operations.

"We're not rushing into" online trading for those very reasons, said Scott Abbey, CIO at PaineWebber, which earlier this month announced plans to introduce fee-based online trading to its most affluent customers beginning some time this summer.

The New York-based brokerage is currently running alpha tests with 60 customers over a secured Internet site.

— Thomas Hoffman

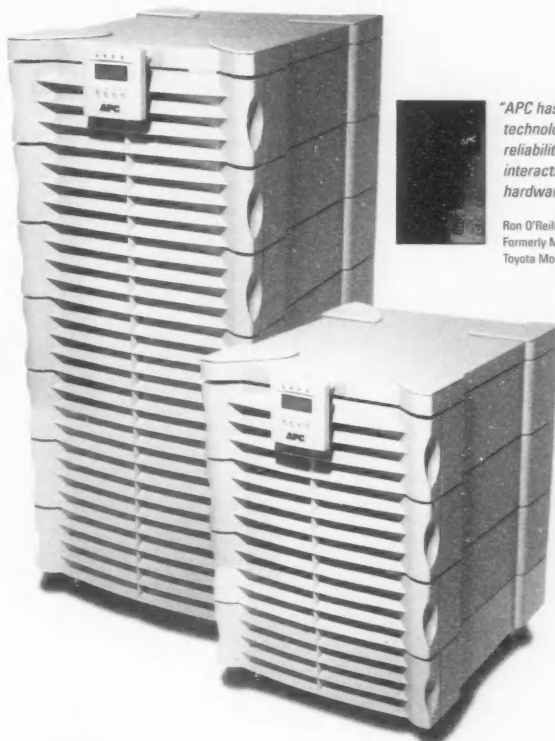
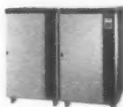
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ALAN R. EARLS/BOOK REVIEWS

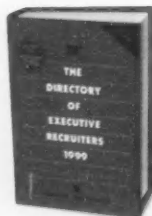
Three for the IT Careers Bookshelf

The Directory of Executive Recruiters 1999
Kennedy Information, Fitzwilliam, N.H.; 1999; 1,361 pages; softbound; includes Career Resource Kit, on CD; \$44.95

In this ephemeral age of Internet time and fast-paced change, it's nice to know that some good things don't fade away. One of them is the comprehensive and authoritative *Directory of Executive Recruiters*, in its 28th edition. A product of Kennedy Information, a respected research firm based in the hamlet of Fitzwilliam, N.H., this weighty volume has listings for more than 11,000 recruiters — with breakdowns by geographical areas, specialties, job functions and target industries.

The directory also offers up a pithy section that summarizes what you need to know to deal effectively with a recruiter.

But its great merit is simply its voluminousness. Size does matter. Individuals seeking a permanent position — and serious about making a worthwhile move — will feel they have left no stone unturned if they use all the information in this book. For any given firm, the reader is likely to get telephone numbers, Web addresses, e-mail addresses and names of individuals with discussions of their focus by industry or job type — as well as salary ranges. The directory is often referred to as the Red Book by those in the recruiting field.



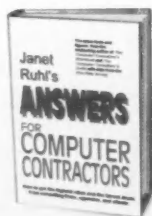
Answers for Computer Contractors
By Janet Ruhl, Technion Books, Leverett, Mass.; 1999; 206 pages; softbound; \$29.95

If you've perused the literature on information technology consulting careers, you've probably run across Janet Ruhl's name. Her *Computer Consultant's Workbook* and *Computer Consultant's Guide* have each earned positive reviews and steady sales.

Answers for Computer Contractors fills in some more blanks for both new and experienced contractors with a hard-hitting, well-organized collection of facts and figures about compensation as well as collected wisdom about how to negotiate higher compensation rates.

Organized in question-and-answer format, *Answers* is extremely accessible and easy to use. Indeed, its ease-of-use is almost as valuable as the information it contains. The book encompasses just about every topic you need to know to contract successfully.

Those topics include legal niceties, Internal Revenue Service rules, and methods of finding opportunities through consulting firms, agencies and on your own. There's also good advice on ways to earn higher compensation by delivering more value to the customer. If you contract or plan to, this "Ruhl book" belongs in your library.



Polish Your People Skills
By Bobbi Linkemeyer, Amacom New Media, New York; 1999; 240 pages; softbound; includes CD; \$39.95

People are the "stuff" of business, and good people skills are the new mandate for IT professionals. None of us can accomplish much without learning how to work effectively with others. That's the simple premise behind this book/CD combination. And though the premise is right on target — and the advice is good — the delivery remains weak.

Chapters in the hard-copy book are preachy. Sure, the information is there, but the writing tends to be tedious, long-winded and much less compelling than it needs to be to help us get past what are, after all, intensely personal issues. That said, the book is well-organized and can clearly be a great starting point for mastering one's behaviors.

The companion CD, adapted from an earlier Amacom book, *Working With Difficult People*, has the same strengths and weaknesses as the print book. A large number of imaginary scenarios are outlined, each involving possible conflict. And though the scenarios are interesting and, doubtless, worth understanding, the limited degree of interactivity and depth makes the CD a questionable "plus."

Earls is a freelance writer in Franklin, Mass.



EXECUTIVE TRACK



Richard J. Fishburn has been appointed vice president and CIO at Corning Inc., a Corning, N.Y., manufacturer of optical

fiber, cable and photonic components and high-performance displays, as well as products for the scientific, environmental and semiconductor markets. Fishburn was previously vice president and CIO at Digital Equipment Corp., where, in a 14-year career, he also held the positions of vice president of PC business strategy, vice president of investments and vice president of finance/worldwide operations.



Rob Jones has been named vice president of information technology at Express by The Limited Inc. in Columbus, Ohio. Express is one of The Limited's retail

clothing stores. Previously, Jones was vice president of IT at Structure, another store in The Limited's chain. Jones has also been a programmer and project leader at both The Limited and Abercrombie & Fitch and worked as a systems analyst at American Electric Power.



Larry E. Kittelberger has been promoted to corporate senior vice president of IT at AlliedSignal Inc. in Morristown, N.J.

AlliedSignal manufactures aerospace and automotive products, chemicals, fibers, plastics and other materials. Kittelberger will continue to serve as CIO, a position he has held at AlliedSignal since 1995. Prior to joining AlliedSignal, Kittelberger held a variety of IT leadership roles at Tenneco Inc. Kittelberger is also a member of The Research Board, a forum of CIOs from leading corporations, and serves on the board of the Commonwealth of Virginia's Council on Information Management.



William C. Pratt has been named CIO and senior vice president for technology at PR Newswire, which electronically distributes full-text news releases to the media and financial communities. PR Newswire is headquartered in New York. Pratt joined PR Newswire from Bantam Doubleday Dell, where he restructured the pub-

lisher's technology base and introduced new Internet and database access services. Prior to that, he was chief technology officer at a division of the publisher Simon & Schuster Inc.



Polly Ann McClure has been named vice president of information technologies at Cornell University in Ithaca, N.Y. McClure came to Cornell from the University of Virginia, where she was a scientist and administrator as the associate vice president of information resources. Prior to that, she was dean of academic computing at Indiana University. McClure has a doctorate in zoology, specializing in ecology, from the University of Texas at Austin and serves as chairwoman of the board of EDUCAUSE, an organization devoted to promoting the use of technology in education.



Jack F. O'Connor has been named vice president of information systems at Jenny Craig Inc. in La Jolla, Calif. O'Connor most recently served as director of systems and planning at Callaway Golf Co. in Carlsbad, Calif. Prior to joining Callaway Golf, he worked for eight years at Scientific Applications International Corp., where he held the positions of assistant vice president and director of e-commerce and communications solutions.



Donald T. Parker has joined Comerica Inc. in Auburn Hills, Mich., as senior vice president and director of information services. Headquartered in Detroit, Comerica is a financial services and operator of banks. Previously, Parker was senior vice president of the corporate operations and information services division at National City Corp. in Cleveland. Prior to that, he spent 18 years at IBM in various technology and marketing roles.



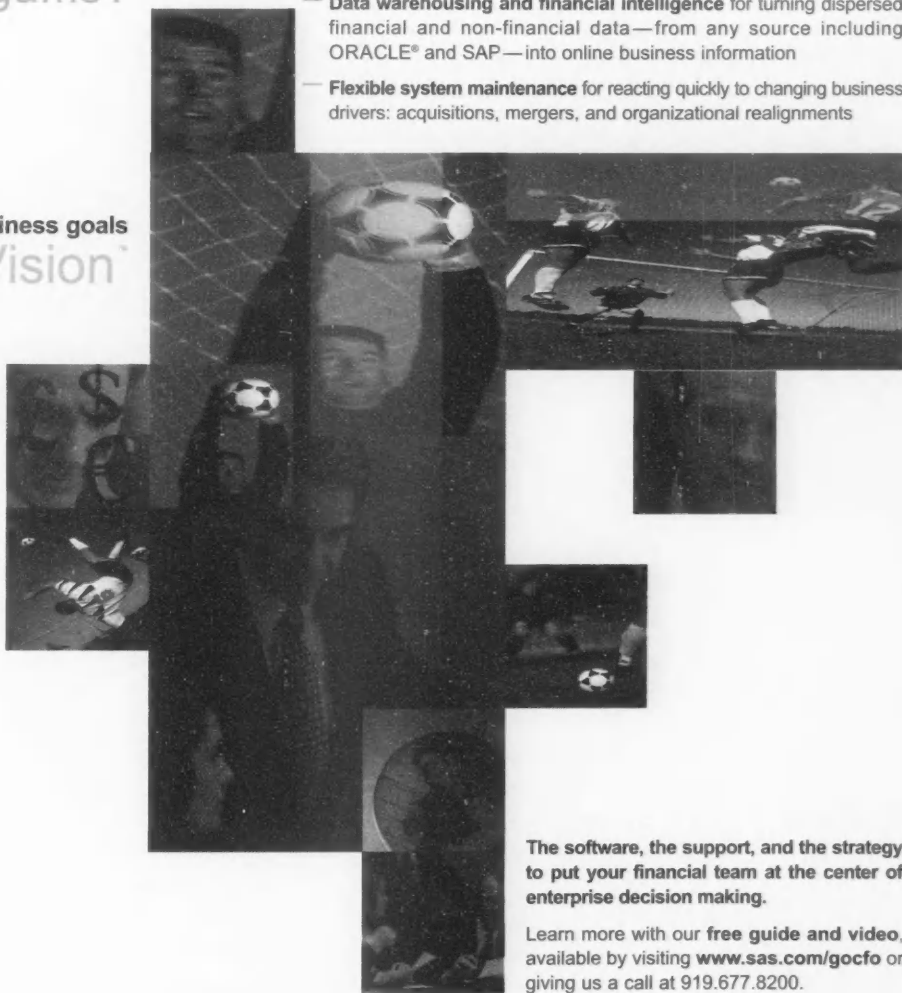
Paul J. Klein has been promoted to senior director of manufacturing systems in IT at Rich Products Corp., a frozen food manufacturer in Buffalo, N.Y. Prior to this appointment, Klein was director of manufacturing systems.

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Point of View

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There's no OS compromise with Armada on the road

Now you can take Windows NT on the road without giving up any of the sophisticated features of a desktop OS. Compaq Computer Corp. has toolled the system software on its Armada line of portables to support PC cards, while offering power management and security capabilities second to none.

Demand for Windows NT on portables is booming. Last quarter, 25% of all portable PCs sold in the U.S. were loaded with Windows NT, according to Forrester Research Inc. in Cambridge, MA.

The next version of Windows NT, Windows 2000, will have robust security and power management features, and full support for PC cards. But until it ships, Compaq is preinstalling Armadas with sophisticated software to bridge the gap.

Compaq engineers have built in power and application management features to optimize Windows NT on the Armada. A critical addition is a plug-and-play utility for hot-swapping peripheral devices like CD-ROM, floppy and DVD drives. Compaq also includes software that supports hot-swapping PC-MCIA cards, including PC modem cards. Thus, Armada users can interact with their data from anywhere, without powering down.

Business customers today can find NT on an Armada laptop more easily than ever before, because Compaq preinstalls NT on over a dozen models. For more information on taking NT on the road, read the Web magazine at the Web site www.WindowsNT-Advantage.com.

How to Deploy Windows NT 4.0 — With

The upcoming release of Windows 2000 has many IT groups trying to figure out how to deploy Windows NT 4.0 on the network, and to do it in such a way that they'll be able to migrate to Windows 2000 when the time comes.

In the inaugural edition of the Web magazine *Windows NT Advantage*, author Rawn Shah takes a look at how IT executives and managers are tackling the subject of migration to Windows 2000.

The first thing they must decide, he writes, is if Windows 2000 has the benefits they need for their environment. The next question is: Should they skip the initial release and plan for the first or second service pack that will follow, or skip an entire generation and wait for the 64-bit Windows environment two or so years down the road?

Windows 2000 is very different from its predecessors, primarily due to the level of integration of the operating system with new server applications for enterprise management. The elements of management, security, user information and systems communications between Windows NT 4.0 and Windows 2000 have changed substantially. In fact, the new features in Windows 2000 take up a large segment of its 30 million lines of code, while the actual kernel and core operating system are about the same size as before.

An organization should know which improved features in Windows 2000 it can best take advantage. Significant portions of Windows 2000 are dedicated to making a network of servers more manageable through standardized interfaces.

Even on the road, some require an OS

Windows 98 and Windows 95 are not the right tools for running mission-critical applications on a laptop, writes author Philip Kay in the first issue of the Web magazine *Windows NT Advantage*.

Windows 98 is fine for users who just need word processing, e-mail, spreadsheets and PowerPoint. But if they need to configure a network, run application development tools or synchronize a system with the corporate relational database, they'll need an OS with more punch. In short, for users who need a fast, robust and completely reliable operating system, Windows 98 is not an option.

That is why nearly 25% of high-end Compaq laptops ship with Windows NT Workstation. Sales of the OS have reached 31 million and, despite the imminent arrival of Windows 2000, nearly 3 million copies of Workstation continue to sell every month. Customers are choosing Workstation 4.0 because it's more secure, more reliable and faster than Windows 98 or Windows 95.

Until recently, it was difficult to use Windows NT 4.0 on a laptop. When Windows NT was under development, laptop computers weren't powerful enough to run a robust OS, so NT wasn't designed with road warriors in mind. But times have changed. Today's typical laptop has a 400-MHz Pentium processor, at least 32 MB of RAM, and a 3-GB hard drive—more than enough power to run Windows NT. Also, mobile professionals are demanding security, robustness, speed and reliability.

That's why Microsoft teamed up two years ago with hardware vendors such as Compaq, as well as makers of software configuration tools, to engineer mobile support into Windows NT.

At issue were three OS blind spots. At the time, Windows NT lacked plug-and-play support, PC Card support and power management. As a result, tasks like hot swapping CD-ROMs and floppy disk drives or configuring a PC-MCIA modem were difficult, if not impossible. If that weren't enough, the

Compaq preps systems for Windows 2000

For the vast majority of large and mid-size organizations, the transition to Windows 2000 is inevitable. While enterprise computing environments will continue to support multiple operating systems, Windows 2000 will make its way to the majority of servers, workstations, desktops and portables, and once it does, things will never be the same.

It makes sense for organizations to begin preparing for Windows 2000 by buying Windows 2000 Ready platforms whenever they buy new client systems. The ability to easily upgrade to Windows 2000 is an imme-

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Point of View

Windows 2000 in Mind

Other features enhance the ability to roam along with your data, and provide better means to support user accounts and groups. In short, most of the enhancements in Windows 2000 are intended to scale to the enterprise environment.

Once you've evaluated what this new environment can do for your organization, it's time to ask the big question: How do you deploy Windows NT 4.0 systems now and still plan to migrate to Windows 2000 in the future?

According to Shah, the three major planning stages are:

- 1) Planning the Windows NT environment for your current needs;
- 2) Deciding which Windows 2000 features you want to exploit of and envisioning how your net-

work will look when the transition is done; and

- 3) Developing a path that painlessly takes you from the current Windows NT environment to the Windows 2000 strategic plan.

The first issue of the Web magazine *Windows NT Advantage* looks at the Stage 1. The second and third stages will be covered in the weeks to come. You can check out the first issue by going to www.WindowsNT-Advantage.com.

www.WindowsNT-Advantage.com

This Special Section is the first in a series of biweekly inserts that will run in *Computerworld* to brief readers on *Windows NT Advantage*, a Web-only magazine for IT leaders. *Windows NT Advantage* is underwritten by Microsoft and Compaq but is an editorially independent Web magazine that will address issues for IT managers charged with keeping on top of the latest solutions from Microsoft and Compaq.

Every two weeks, *Windows NT Advantage* will offer new feature stories and case studies on areas such as strategic planning and implementations; enterprise management; e-commerce; and PC life-cycle management. Each issue will feature Point of View columns by Microsoft and Compaq, market analysis by International Data Corp., a feedback forum and an on-line poll, and will offer links to other resources on the Net.

www.WindowsNT-Advantage.com

with punch

advantage of using Windows NT—that it wouldn't crash in the middle of an important operation—was negated because the system could simply run out of juice and power-off at any time.

If you're a laptop user who needs a robust OS now, you'll want to read the whole story of how Compaq and Microsoft resolved the problems of running Windows NT on a laptop. It's all in the Web magazine *Windows NT Advantage* at the site www.WindowsNT-Advantage.com.

diate advantage of Windows 2000 Ready systems, which are available today.

All currently shipping Compaq servers, Deskpros and Armada PCs are certified to run Windows 2000 Beta 3. When Windows 2000 is launched, all shipping Compaq servers and clients will be Windows 2000-qualified, meaning they will support Windows 2000 either out of the box or with simple upgrades.

Windows 2000 delivers benefits across the enterprise in better hardware support, improved security, greater scalability (via support for up to 32 processors), improved manageability and an improved user interface for clients.

On the server side, Microsoft will introduce three versions of Windows 2000.

Windows 2000 Server is a robust platform for file-, print- and application-server requirements. Windows 2000 Advanced Server adds clustering and fault-tolerance capabilities for mission-critical applications. Windows 2000 DataCenter Server provides even greater scalability, reliability and availability.

On the client side, Windows 2000 will include enhanced mobile computing features, including a new power management technology providing longer battery life for mobile users.

To learn more about purchasing Windows 2000 Ready products and certified servers from Compaq, you'll want to read the first issue of the Webzine at www.WindowsNT-Advantage.com.

Windows 2000 Beta 3 may go to 650,000 testers

Microsoft has rolled out Windows 2000 Beta 3, along with a new testing program that puts beta software in the hands of more users than ever before. An array of beta evaluation resources, including a Windows 2000 compatibility Web site, reveals the value of upgrading to Windows 2000 to users still gathering facts about the forthcoming OS.

In addition to sending Windows 2000 Beta 3 to its core of 250,000 evaluators, Microsoft has opened up the beta-testing process through its Windows 2000 Corporate Preview Program to as many as 400,000 additional testers. A \$60 beta-test fee includes five licenses of Windows 2000 Professional, two licenses of Windows 2000 Server, instructional videos, walk-through demos and training.

Moreover, because Windows 2000 Beta 3 is feature complete, IT professionals who give it a test run will be prepared for migration later. "Any opportunity for getting up to speed on Windows 2000 as early as possible will be of great benefit to IT managers when it comes time to upgrade," said Craig Beilinson, a Windows 2000 product manager at Microsoft.

To read more about the list of additions to Beta 3 that make it a polished platform that is both easy to use and harnesses the power of NT, check out the inaugural edition of *Windows NT Advantage* at www.WindowsNT-Advantage.com.

Produced by:

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Microsoft

BRIEFS

Org Chart Tool

SAP AG this week is expected to bundle third-party software for building organizational charts with an upgrade to its human resources applications, due out later this year. OrgPublisher, developed by TimeVision Inc. in Irving, Texas, is also scheduled to be used by SAP in its own operations.

Utility Spiffs Site

Niagara Mohawk Power Corp., an energy delivery company in

Syracuse, N.Y., recently hired Logical Design Solutions Inc. (LDS) in Morristown, N.J., to assess and redesign its Web site (www.nimo.com), an LDS spokeswoman said. Niagara has more than 1.5 million electricity customers and more than 540,000 natural-gas customers.

Self-Service Apps at Cummins

Cummins Engine Co. said it will deploy Web-based, voice-response-capable self-service applications to its 16,000 employees and managers. Interlynx Technology's InterAction software will provide benefits and human resources information, according to Interlynx.

The software has interactive voice-response capability and runs in a Web browser.

IT-Ready Degrees

Academic disciplines other than computing that offer strong training for IT careers:

- Mathematics
- Statistics
- Engineering (other than computer engineering)
- Physics
- Chemistry
- Philosophy
- Business
- Music
- Instructional design
- Graphic arts

SOURCE: THE COMPUTING RESEARCH ASSOCIATION'S INTERVIEW & STUDY GROUP ON IT WORKERS, WASHINGTON

NEW REPORTS

Web-Site Primer

E-commerce projects affect an entire organization — and the most successful ones foster feelings of ownership in multiple departments, according to an International Data Corp. (IDC) study. In a report titled "E-commerce: Fitting the Appropriate Software to Business Objectives," IDC details how 10 companies created e-commerce sites — by building, buying or outsourcing them — and how they arrived at those decisions.

The report costs \$795. www.idc.com

IE Is Top Browser

Microsoft Corp.'s Internet Explorer has surpassed Netscape Communications Corp.'s Navigator as the primary corporate browser, with 59% using Internet Explorer and 41% using Navigator, according to Zona Research Inc. in Redwood City, Calif. In a survey of 308 companies, 69% said they encouraged the use of one browser. Of that group, 62% said Internet Explorer was the standard. The report is available at www.zonaresearch.com/browserstudy.

BUSINESSOPINION

ED YOURDON

Y2K legislation and you

AS IF YEAR 2000 weren't hard enough to plan for already, pending legislation is going to complicate things even more for Y2K project teams. In mid-May, the House of Representatives approved a bill intended to defuse the \$1 trillion, Y2K litigation time bomb. The bill, if passed, would impose a 90-day "cooling-off" period, limit the liability of corporate executives and impose a \$250,000 cap on punitive

damages. Last week, the Senate approved its own version of a Y2K business-protection bill.

Assuming that the House and Senate eventually agree on a bill, the president might still veto it. But it does appear likely that some form of Y2K litigation protection will eventually pass. It also appears likely that many states will pass legislation exempting themselves, their employees and their contractors from Y2K litigation.

I'll restrain myself from discussing the political, philosophical and ethical issues in this column. For Y2K project teams, the more practical question is this: If legislation of this kind does become law, how will it affect our strategy? What should we do to take advantage of the legislation, and what should we do to avoid being harmed by it?

I believe that the moment this kind of litigation-protection legislation is passed, several CEOs are going to call their Y2K project managers. "OK, you can stop wasting our money on Y2K testing and all of that contingency planning nonsense," they'll say. "The 90-day cooling-off period is all we need: If we do have a Y2K bug, we've got 90 days to get it fixed before we can really be sued."

To put it bluntly, there's a good chance that the Y2K legislation will encourage some businesses to adopt a fix-on-failure strategy because they can get away with it and because they believe it will cost them less money.

If you get such a call, resist the urge to argue about the ethics of that strategy. Focus instead on the economics, and make sure you've done your homework in advance.

That way, you'll be able to say, "Yes, we might be able to avoid a lawsuit, but the cost of a Y2K problem in our mission-critical systems will be devastating simply in terms of lost revenue, lost market share and the cost of repairing the de-

fect after it has clobbered our databases."

Also, remind your CEO of the old saying: What goes around, comes around. While he's figuring out how he can prevent his customers from suing him during the 90-day cooling-off period, his suppliers' CEOs will be trying to prevent him from suing them.

If aggressive litigation is part of your contingency plan to encourage year 2000 compliance on the part of your mission-critical suppliers, you'd better reconsider.

Focus on the economics, and make sure you've done your homework.



If a small or midsize vendor can't supply critical products and services, can you afford to go up to 90 days — and possibly longer — without any legal relief? Is there any way to find out whether your vendors' CEOs are planning to use the Y2K legislation to justify their own fix-on-failure strategies?

And for those companies that rely on local, state or federal agencies for a large part of their revenue, it's also worth re-evaluating your Y2K contingency plan in light of legislation that exempts those agencies from being sued.

Whereas litigation might have provided some financial relief for disruptions in the past, it may not be available if the government can demonstrate that it had something to do with Y2K. Even if you don't generate revenue from the government, you need to take another look: Licenses,

permits, taxes and a host of other mission-critical government interactions could be disrupted by Y2K problems.

As usual, new laws mean new complications. It's time to call in your corporate lawyer and review your Y2K contingency plans from a new perspective. ▀

Yourdon (www.yourdon.com) heads the year 2000 service at Cutter Consortium in Arlington, Mass. Contact him at his Web site.

web server

applications

database server

Are your INTERNET APPLICATIONS worth the risk?

When your web site was just a brochure, it didn't matter who hosted it. Now your web site contains sensitive company information, enables purchases and acts as a key communication channel. Can you afford to trust your site to just anyone?

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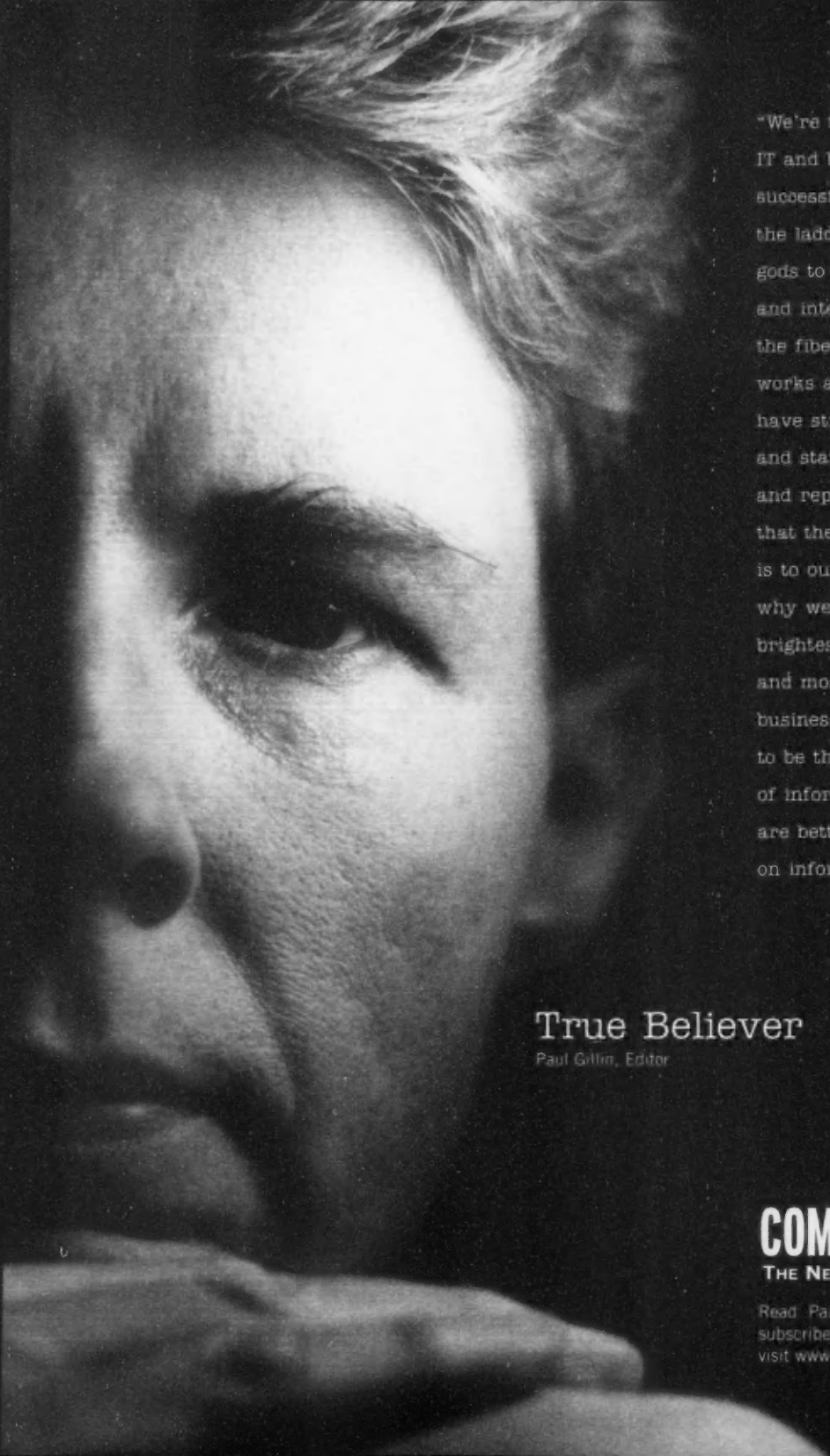


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COMPUTERWORLD'S
THIRD ANNUAL
HOT SKILLS REPORT

THE BUZZZZZ ON THE BEST



**Want to give
your career
its best skills
boost? Invest
in these honey
pots, say top
IT execs
By Steve
Alexander**

WANNA GET REALLY HOT this summer? Then bask in the glow of these technology and business skills. We asked several top information technology executives to offer tips for IT pros who want to advance their careers. Their advice: Learn about project management and teamwork, develop business expertise and work on personal communications skills. Some of the most highly prized management skills are team-building, managing outside partners and vendors and negotiation savvy.

Executives say the hottest language skills to learn are anything Web-related as well as C and C++ programming. Oracle continues to be the favored database skill, and security techniques are a widely valued Internet/intranet skill. Among the jobs that are hardest to fill are project manager, Web developer and senior-level systems or network analyst.

The Hot Language Skills

ECKROTH: The Internet language skills required to implement a company's e-commerce and intranet strategies are in high demand — languages such as Java, HTML, [Oracle's] PL/SQL and now XML [Extensible Markup Language].

NATAM: Anything Internet application development-related, including Java and HTML; Visual Basic, C and C++; and ... Cobol skills.

REEL: We continue to look for experts in Java and C++, but it's the ability to really understand a requirement and manipulate the tools to develop the solution that matters most.

RUBIN: Cobol for the next few months. C++ and [Advanced Business Application Programming — the SAP report language] are important. But two skills that really

count today are the ability to design Web pages and knowledge of SAP configuration.

TILNEY: Java, ActiveX along with C++ continue to be among the most sought-after language skills.

The Hot Networking Skills

ECKROTH: [Windows] NT by far. Webcasting requires a grasp on a whole new set of technologies. People with skills in deploying and integrating network monitoring tools such as OpenView, Vital Signs, [Microsoft System Management Server] are very hot.

NATAM: Internet Protocol, extranets, network security, LAN, WAN, frame-relay, router, hub and gateway technology, integrating voice and video streaming, network design and performance.

REEL: Network engineers with ex-

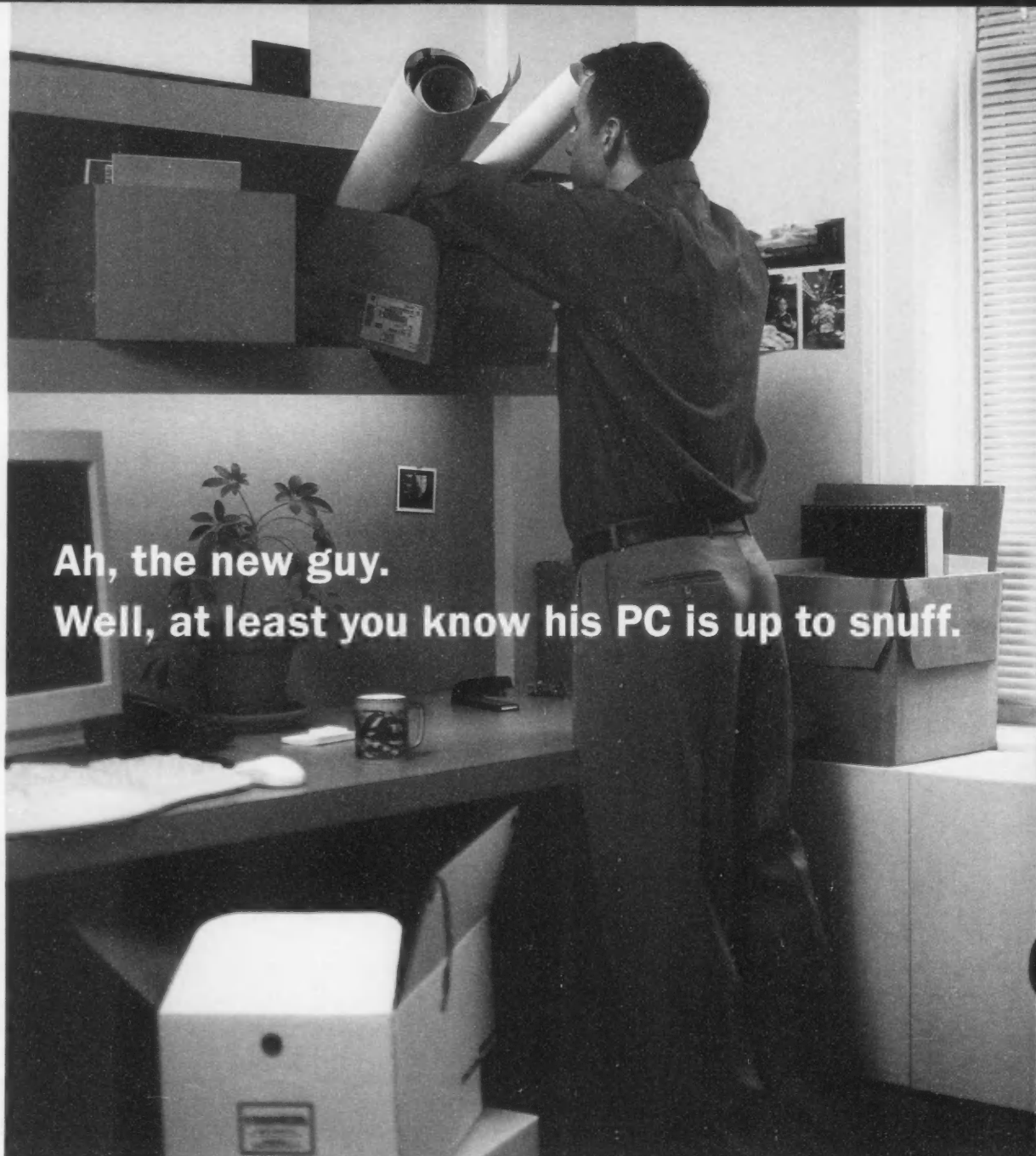
perience in [Open Shortest Path First] and other advanced routing protocols. Network security also is critical, and our needs in that area are always evolving to stay ahead of the market.

RUBIN: NT Server. Unix-based languages such as Linux. The ability to link Web-based technologies with internal systems.


TILNEY: Networking skills, such as Windows NT, Unix, firewall, IP design and management, voice over IP, quality of service and virtual private network.

COMARTY: Diagnostic skills through the use of platforms such as ... OpenView and Cisco Works; design skills for Fast Ethernet, Gigabit Ethernet, [Asynchronous Transfer Mode] and Fiber Distributed Data Interface; performance management skills for tuning and load balancing.

Hot Skills Report, page 66



**Ah, the new guy.
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COMPUTERWORLD'S THIRD ANNUAL HOT SKILLS REPORT

Continued from page 63

The Hot Database Skills

NATAN: Data warehousing, data mining, SQL Server and Oracle.

REEL: All database skills are hot, but the ability to move data into and out of SQL-compliant environments is most important. It's the analytical skills that matter most in this area.

TILNEY: Oracle and SQL Server are the most needed database skills, along with an ability to provide data as strategic information.

CONARTY: Architecture, design and administration of distributed relational databases in business and manufacturing systems.

The Hot Internet/Intranet Skills

ECKROTH: Programming in Java, HTML, XML; security experts; systems architects; good project management skills; and system integrators for back-room integration with Internet front-end applications.

NATAN: Application development, security and browser technology.

REEL: Using Java and XML together to manipulate, merge and manage information is an important part of our tool kit.

RUBIN: Design of [Web] sites. Anyone who can talk about e-business. The ability to link intranets with extranets.

TILNEY: In addition to networking skills, Cold Fusion, Microsoft Internet Information Server and Internet security skills.

CONARTY: Site design, content authoring, security, encryption and infrastructure design.

The Hot Systems Development Skills

ECKROTH: E-commerce, user management, content management and enterprise application integration.

NATAN: Electronic commerce, business information, Lotus Notes and package integration, such as PeopleSoft.

RUBIN: E-business, SAP.

TILNEY: E-commerce, along with ERP [enterprise resource planning] and object-oriented analysis and design.

CONARTY: Analyst and programmer skills in support of business-to-business e-commerce programs; real-time, advanced process control engineers.

The Hot Client/Server Software Skills

ECKROTH: ERP — Oracle, SAP, Baan and PeopleSoft. Sales force automation/front-end systems — Sebel, Clarify, [Relational

Technology System's] Trilogy and Pivitol. And very much the design and product definition management systems such as [Parametric Technology Corp.'s] Windchill and Sherpa.

NATAN: System integration, application architecture and testing.

REEL: As we push distributed computing to the desktop, software distribution skills and the management of related tools are important.

RUBIN: SAP.

TILNEY: Visual Basic and PowerBuilder continue to be the client/server development skills of choice, but more important is the ability to customize client/service architecture design to balance application performance and overall cost of implementation and operation.

CONARTY: C++ and Visual Basic. Also in demand are database designers for Access and Oracle, and application designers for thin-client implementations.

The Most Sought-After Job Titles

ECKROTH: The most sought-after titles are network engineer, system architect, webmaster, Web application developer, senior project manager in the new technologies and CIO.

NATAN: Project managers, business analysts and anything having to do with the AS/400. On the application side, Internet developers, people with WINS [an insurance system] experience. On the infrastructure side, network people and good help desk people.

REEL: Strong project managers and project leaders are very difficult to find. Talented technicians with good project management skills are nearly impossible to find.

RUBIN: SAP analyst, Web designer and e-business specialist.

CONARTY: Senior network engineers, database architects, process control engineers, programmer analysts for Java and C++.

The Best Combination of Skills

NATAN: Strong systems thinking, an understanding of the system development life cycle and ability to adapt to change.

REEL: Business acumen and communication skills are becoming more important than ever. However, complexity is also requiring that we surround ourselves with strong technicians.

RUBIN: An ability to learn, coupled with knowledge of one of the hot skills mentioned above.

TILNEY: Combine a high level of technical competence with a high degree of business unit knowledge, project management, communication, interpersonal and teamwork skills.

CONARTY: Continual growth in areas such as networking, database design or process control, coupled with business skills in consulting, communications, negotiation and team leadership will be rewarded.

The Top Management And Communication Skills

ECKROTH: A successful IT manager must be able to build and energize a team, design and manage outsourcing partnerships and strategic vendors, simplify IT jargon so that businesspeople can understand it and translate business requirements into quantifiable IT deliverables.

REEL: Understand the value of an investment and stay focused on the ability to return that value to the customer. Listen carefully to your colleagues and your customers. It's often the combination of their ideas that will result in growth for them, and for you.

RUBIN: Talk clearly. Get along well with peers and internal clients. Focus on a company's bottom line.

TILNEY: Concentrate on integrity, project management, organization and planning, oral and written communication, teamwork and interpersonal skills.

CONARTY: Entrepreneurial spirit, cross-functional team membership, problem-solving and analytical ability, motivation and inclination to business issues, negotiation and leadership skills in a changing environment and business process consulting.

Career Advice for IT Professionals

ECKROTH: The fastest way to learn is through taking on broader and bigger assignments, even if they aren't a promotion.

NATAN: A specific language or technology may get you into an organization, but technologies change quickly. A strong focus on the basics — problem-solving, understanding the business, customer focus, communication, project management, application life cycle approaches — will serve you better in the long run.

REEL: Before investing in highly specified technical training, I would suggest that a person do a self-assessment to determine how strong his or her analytical and communication skills are. If the fundamental skills exist, I would encourage training in Web-based tools, PC and network skills and database management tools.

RUBIN: Make sure you've got the interpersonal skills and training, then pick one of the top needs — SAP, e-business, etc.

TILNEY: Maintain your skills. Include company goals with your goals, and set up your training plan to support both. Blending business skills, such as financial or operational skills, with technical skills and management/communication skills will make you the most valuable and successful.

CONARTY: Maintain a balance between advanced technical training and specific product training, and seek diversity of training within two specific disciplines, such as network and database. ■

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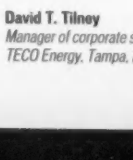
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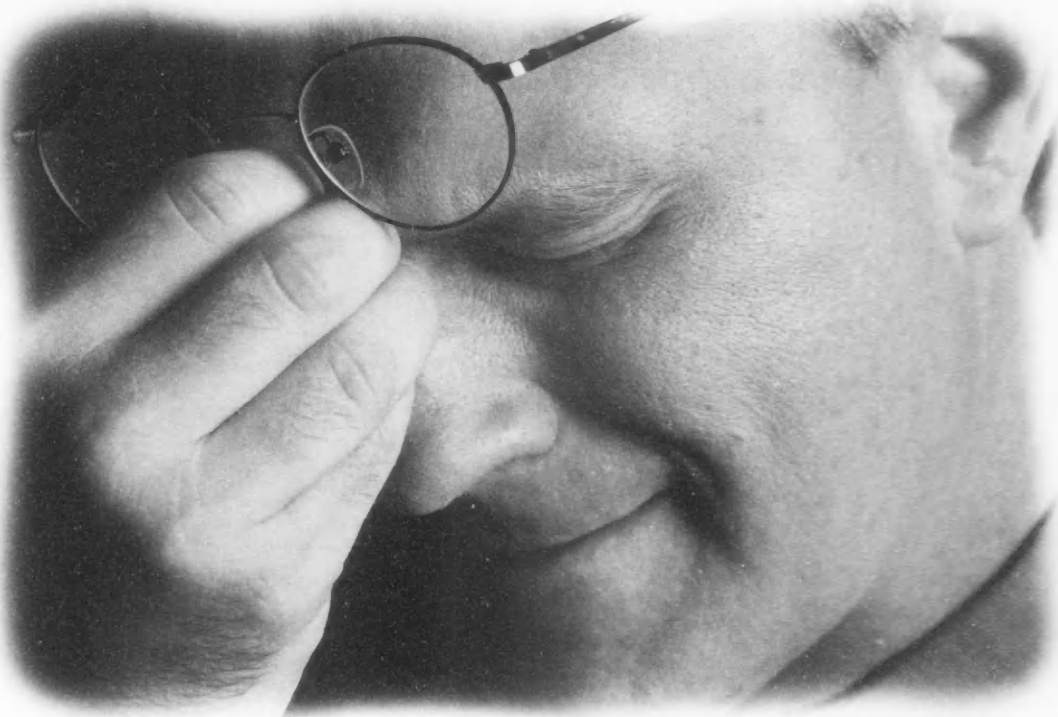


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CONTRACTING'S

rights, rules and regulations

BY LESLIE GOFF

If YOU'RE AN independent contractor — be it a 1099, an incorporated sole proprietor doing business corporation-to-corporation or a partnership of independents — most of what you're both entitled to and bound by are driven by the Chapter 1706 tax regulations. That means you must not look, smell, taste or sound like an employee in any way, shape or form.

If you're a W2 professional, you're essentially an employee. But because of the nature of the job, if you're switching agencies several times per year, you don't necessarily get the same benefits as an employee. In other words, you may have few obligations, but you also have few entitlements. That's especially problematic when it comes to retirement savings. It also means money out of your pocket when it comes to paying Social Security taxes.

In the following report, consultants discuss the rights, rules and regulations that dominate how they do business:

Rights

■ Every contract is negotiable.

Most companies have their own standard contracts, drawn up by their lawyers. But just because they hand it

to you doesn't mean you have to sign it. "It's not a mortgage agreement — you can tear the whole thing up and start over," says Tom Scott of Tom Scott Consulting in Encinitas, Calif.

The contract gives you the opportunity to assert your rights and guarantee your status as a contractor. Basically, you have two options: Scott favors a detailed contract, while consultant David Sims prefers to rely on mutual trust between himself and his client.

Scott spells out everything in his contract — from the length of the job to his tax payment. Sims, an independent consultant doing business as Sims Computing in Colorado Springs, has a simple, two-page contract that establishes that he isn't an employee and specifies his rate, payment terms and ownership rights to the code he writes. "You can't spell out everything because you have to be able to trust each other," Sims says.

■ Be your own boss.

This is a right that derives from the rules — the 1706 rules. You set your own hours; you determine where and how the work is to be performed; you pay your own taxes. State all of that in the contract, consultants say. Otherwise, you risk looking like an employee.

Bill Meng, owner of Marasys Inc., an independent consultancy in Coeur d'Alene, Idaho, says he likes to influence the design decisions that affect the way software is coded, so his contracts state his right to review design documents.

■ Show me the money.

Always specify payment terms in your contract, including your rate, payment schedules and expenses to be covered by the client. If you're expected to perform any ongoing maintenance after the project is completed, add in payment terms.

■ Right-to-work state.

Don't be coerced into signing ridiculously restrictive, noncompete clauses. Scott recalls a noncompete clause that said he "would not work for any company in the same line of business anywhere in the United States or any of their suppliers," which basically meant

I'd have to quit contracting." He refused to sign it — and still got the job.

■ All good things must come to an end.

Indicate a termination date in the contract. You don't want to be committed to a situation indefinitely, Scott says. "You're responsible for the quality of your work, and at a certain point you are going on to another job," he says. "Or you may get into a contract where a client is extremely difficult to work with, unreasonable, and you want a way to extricate yourself if you need to. A termination date gives you a politically neutral way to do that."

■ Intellectual property.

State up front who owns what. The completed product clearly belongs to the client, but if you developed the code using a tool set you developed or if the product contains custom code, set up a licensing agreement. One client asked Scott for the right to examine all the software Scott had ever developed to determine what belonged to whom.

Rules and Regulations

■ Tax man, oh, the tax man.

You must pay estimated quarterly taxes based on income and tax owed in the prior year. Missing or late quarterly payments incur penalties. Corporations must pay monthly taxes, making a limited liability corporation (LLC) arrangement an advantageous structure for independent consultants who want to grow beyond sole proprietorship, notes Steven Rodi, a partner at Innovative Development LLC in Chalfont, Pa.

■ Liability.

Two types of liability insurance affect contractors. One covers you if you're injured on the client's premises. Most companies will ask you to obtain that. The other type is more serious and more difficult to come by: malpractice liability insurance.

■ Golden years or welfare state?

If you're an independent, contribution to a retirement account like a Simplified Employee Pension or a Keogh is based on a set percentage of your overall yearly income. But if you're a W2, you're limited to the same, \$2,000 annual contribution of any employee.

■ Social Security - Insecurity for W2s.

One of the biggest financial disadvantages for W2 consultants is that the Internal Revenue Service places a cap on how much an employee pays to Social Security each year. But if you met your cap working for one agency in the first seven months of the year, you start all over again if you work for another agency for the remainder of the year. ■

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.

TOM SCOTT of Tom Scott Consulting in Encinitas, Calif., prefers a detailed contract



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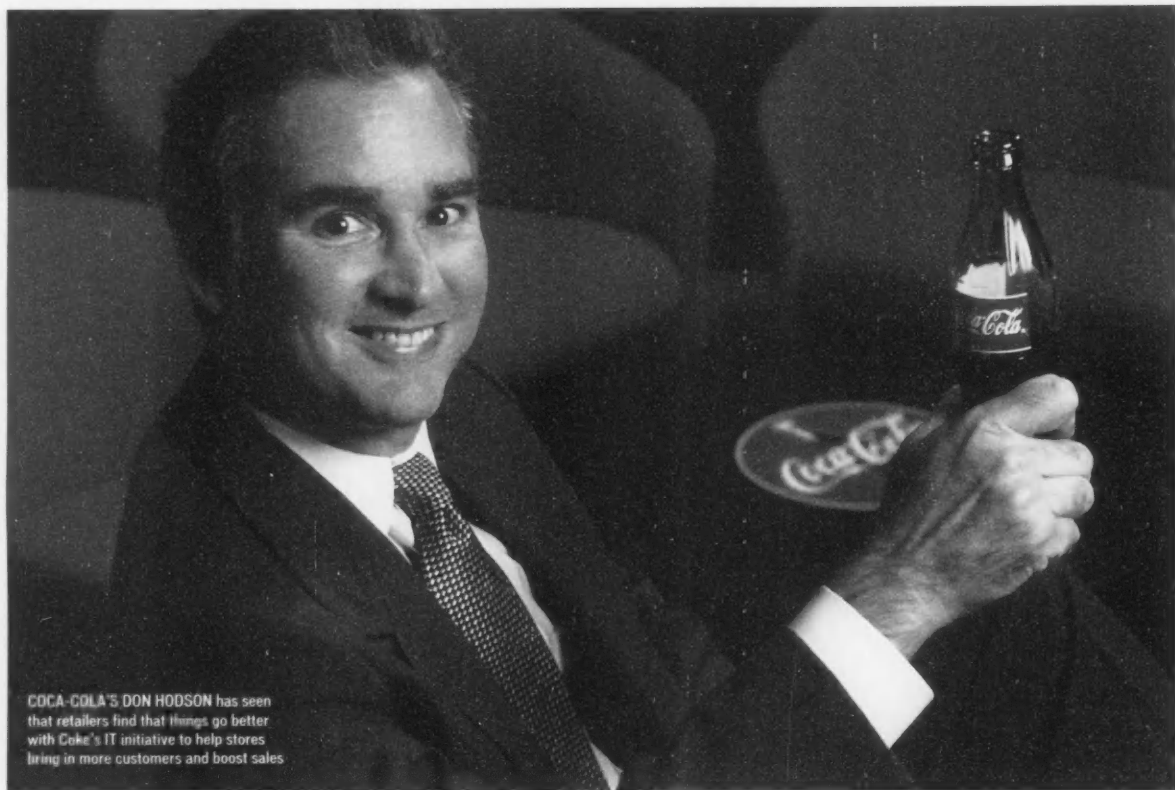
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Coca-Cola:



COCA-COLA'S DON HODSON has seen that retailers find that things go better with Coke's IT initiative to help stores bring in more customers and boost sales

MARKETING PARTNER

How would you like Coca-Cola to use its technology prowess to boost sales throughout your store? That's the premise behind a Coke program that's helping retailers — and the soft-drink giant By Kathleen Melymuka

THE COCA-COLA CO. has used a handful of expert programmers and more than 100 years of marketing expertise to come up with a free program that's helping its retailers bring more customers into their stores and sell more of everything.

With Coca-Cola's help, retailers are translating frequent-shopper data into sales. Take Gerland's Food Fair Inc. in Houston: The 16-store supermarket chain increased sales 9.8% to its core customers, who account for 88% of dollars spent. "We found this program simple and easy to work with, and they understood the business, so that was a tremendous help to us," Gerland CEO Kevin Doris says.

Coca-Cola benefits from increased sales at the checkout counter, but it also positions itself as a true marketing partner to its retailers. It uses their retail space as real-world laboratories for large-scale, long-term marketing experiments such as the one at Gerland.

In the initiative's three-year history, Don Hodson, senior manager for category management information, has worked with more than 40 retailers from gas stations to supermarkets — any business that sells a significant volume of Coca-Cola products.

And Coke doesn't preach. It gets down in the trenches and draws up strategies with its retailers. "We diagrammed each store, set up mandatory end caps in every store and gave stores lists of all the items and highlighted the ones they should promote," Doris says.

How It Works

Virtually every retailer with a scanner collects huge amounts of data on customer purchases, including universal product codes, number of items, price, time and store. Retailers with "frequent-shopper" card programs can also tie a transaction to specific households and track purchasing patterns. Some even know how many children, adults and pets are in a household.

Retailers are already doing some analysis of customer data themselves, but their capabilities vary, Hodson says, and not necessarily by company size. Some are sophisticated, but most can do only fairly basic analyses such as identifying the top 10% of shoppers.

For those companies, Coke can offer much, much more. Retailers in the program pass huge transaction files of information gathered during several months (stripped of any customer identifiers) to Coke's Atlanta headquarters.

At Gerland's, for example, Coke analyzed more than 400,000 transactions involving 5.7 million items, 32,000

shoppers and \$10.7 million in sales.

Because businesses collect information in different formats, the data goes through a painstaking "cleaning" process to prepare it to be run through Coke's proprietary analysis software, which runs on a dedicated Unix server. Then it's fed to modules built in-house using the SAS software development language from SAS Institute Inc. in Cary, N.C. The modules segment shoppers by such factors as frequency of shopping, time, day, average basket size, total spending, profit generated, category and brand preferences. With that information, the other modules in the system can slice, dice and analyze the data. "We have over 30 different applications that we can run," Hodson says.

Growing the Business

The initiative is a garden of delights for Hodson, a statistician. "We quantify what it means in dollars if they put one additional item in the basket, or if you're able to get shoppers in your store one more time," he says.

Hodson stresses that this isn't just about soft drinks. "We identify opportunities to grow that total business," Hodson says. "That's the fun part."

All kinds of manufacturers would like to be in on the fun, says analyst Bryan Spillane at Warburg Dillon Read, a Wall Street research firm. "The retailer has the information, and anybody who's selling into a supermarket wants it," he explains. "They all try to buddy up and say, 'If you share that, we can help you sell more.'"

But Spillane says he views Coke's role as a total business partner with some skepticism. "How much do you really think Coke knows about selling Hellman's mayonnaise?" he asks.

Coke seems to know more than the competition, and that may be enough

for its customers. Unlike third-party marketing vendors, its services are free. And unlike other grocery vendors, Coke addresses the whole store rather than just its product categories. "Pepsi doesn't have any approach similar to what we're doing," Hodson says. "We've consistently heard from retailers that we are unique."

"A lot of manufacturers offer to help retailers, but they don't seem as advanced as Coke," says Scott Ukrop, vice president of marketing at Ukrop's Supermarkets in Richmond, Va. "Coke's got a lot more resources behind it."

One of those resources is Glenn Stoops, managing director for market

research and category management, who's been analyzing that kind of data for more than a decade.

"The others just started a year or two ago," Stoops says. "They haven't invested in the data mining capabilities, the infrastructure, the analysts. Unless you understand how to put it all together, it's just a bunch of pieces."

Specific Store Strategies

In the course of the program, Coke gives its customers advice on specific ways to grow their businesses. At Gerland's, for example, the displays at the ends of each aisle had been largely given over to snack and convenience items — the targets of "fill-in" and occasional shoppers. The Coke study suggested that if the stores replaced them with "stock-up" items such as pasta, soup and tissues sought by core customers, the increased visibility would boost the average basket size for core shoppers and turn "fill-in" shoppers into core shoppers by reminding them to stock up on essentials.

It worked. "It converted some secondary shoppers into primary shoppers," Doris says. "We made a big jump in sales and have maintained that. In fact, we're at the highest level we've ever experienced."

But Spillane says Coke probably isn't telling retailers anything they don't already know. "All supermarkets know the centers of their stores are dying," he says. "So Coke tries to put products along the perimeter, trying to get people to buy more."

Even so, some retailers like the program so much they participate indefinitely, allowing Coke to manipulate displays, product placement and signage to test new strategies. Others work with Coke intermittently. At Gerland's, for example, sales have reached a plateau, and Doris says he may go another round with the program to tweak sales. The program also builds relationships. "When we're able to help them grow their business, it positively affects the relationship," Hodson says.

"We've always had an excellent relationship with Coke," Doris says, "and we appreciated the fact that they did this. The buzzword is you're supposed to partner up with suppliers, but we do consider them a partner."

Melymuka is Computerworld's senior editor, management. Contact her at kathleen_melymuka@computerworld.com.

MORE ONLINE

For a look at some technical challenges the Coca-Cola program faces, visit our Web site. www.computerworld.com/more

Dicing the Data

Here are the kinds of analyses Coke offers retailers:

- Determine the optimal promotion price for an item that will appeal to valuable shoppers while reducing "cherry picking" by low-profit bargain hunters.
- Compare the ability of items in circulars to generate more store traffic and attract new customers.
- Analyze shoppers' routes through stores and recommend strategic placement of displays to stimulate impulse buys.
- Identify categories shoppers aren't buying and develop strategies to capture those sales.
- Recommend changes in the use of space by category, brand and item to appeal to the most valuable shoppers and maximize profits.
- Analyze individual store sales to identify differences in traffic flow, basket size, categories and items purchased. Then, manipulate store space to stimulate purchases by the customer base.

The Big Picture

Aside from the obvious benefits, Coca-Cola's frequent-shopper analyses give it data that will be essential in navigating the dangerous shoals of retailing during the next few years. "The American grocery industry is a \$300 billion Goliath in a state of fundamental change," says Peter Sealey, co-director of the Center for Marketing and Technology at the University of California at Berkeley and former global marketing director at Coca-Cola. "Retail grocers today do not want to sell Kellogg's Corn Flakes for 1% [profit] when they can sell salad and deli and sushi for 30% to 40%."

Essentially, supermarkets are evolving into outlets for prepared and semiprepared foods, he says, while manufacturers will be taking products directly to consumers via retail e-commerce. In the meantime, both are working together as they look to a future apart. "A power dance is going on [in which] manufacturers [are] getting in bed with grocers and working with them as they [prepare] to have a direct relationship with the consumer," Sealey explains.

He says the information Coke is gleaming about consumer buying patterns will help it develop those direct marketing programs. "If Coke understands what you are buying, it knows everything about your life, and it can market to you against that," he says. "If I know you've got a kid at home, I've got PowerAde for you. If I know you're a bargain hunter, I can price to you differently."

Coke and the retailers stress that Coke gets no identifying information on households, but it doesn't need to, says Wesley Moultrie, an analyst at Duff & Phelps in Chicago. "They get a store, a neighborhood, a city and a region," he explains. "It allows them to do a whole lot of targeting."

—Kathleen Melymuka

Return on Investment

BY ANN HARRISON

DETERMINING whether financial ventures are generating adequate returns is something of an art — but there's a lot of science to it, too.

To determine the value a project delivers, you need to understand return on assets (ROA), return on equity (ROE) and return on investment (ROI).

Robert C. Fink, an associate professor at Stonehill College in Easton, Mass., defines ROA as the income a company generates during normal operation divided by its total assets, which include cash, inventory and computer hardware or software.

This calculation determines how well a company is using its assets to generate income. An example of how information technology assets generate income can be seen among e-commerce companies that use servers for the essential transactional processes of buying and selling goods and services online.

Another Approach

Others may think differently. Dewey Norton, vice chairman of the committee on finance and information technology at the Financial Executives Institute in Morristown, N.J., defines ROA as total investment minus debts, expenses and other liability, with a portion of long-term debt added back.

AT A GLANCE

Glossary

A few terms that may help you understand measures of return:

Common equity: The value of company stock owned by the public.

Cost of capital: The money to fund a project — includes interest on loans or the predicted benefit of doing something else with the money.

Liability: Financial responsibility, including debt and potential loss.

Net income: A company's total earnings, with adjustments for revenue and the cost of doing business.

Return: The change in value of an investment over time.

DEFINITION

What it is: A set of formulas to calculate how much value a company delivers from its assets and investments, and the money its investors put in.

Why you need to know it: When making an investment in IT projects and equipment, you need to be able to measure and demonstrate the value of that investment.

According to Norton, current liabilities can include money for acquisition of IT inventory and other assets.

Norton says current liabilities should be compared with the cost of borrowing money to cover these expenses to determine whether the investment generates more money than the cost of financing those investments.

Corporate ROA provides a benchmark for measuring the value of investments such as IT systems, Fink says. Money spent on IT is worthwhile if the additional income generated from using new IT systems, minus the cost of those systems, is greater than the average corporate ROA number for that industry.

The cost of an IT system doesn't include just the price tag plus money spent on support or customer development, Norton says. When determining the cost of an IT asset, a company should factor in whether it requires the development of new technology. The company should also consider how many people will need to work together from various locations and if they have the project management skills to complete a highly distributed project, Norton says.

What to Know About ROE

ROE, on the other hand, is a company's net income divided by the total amount common stockholders have paid for stock in the company.

ROE is related to, yet distinct from, assets in ROA. To

buy assets, you need common stock owners to invest in your business or loans to pay for things that cost more than the amount of cash on hand at any time.

"ROE represents the return to the owners of your business that the company has generated in the past year," Fink says. If a company's stock is providing a good return for investors, an e-commerce company, for instance, can use that money to make needed IT investments, such as faster servers that can improve the speed of service and, thus, the perceived value of the company.

ROI gets

a little more complicated. According to Fink, there are various ways to determine ROI. One way is to estimate the extra money a new IT system will bring in, or its cost savings, minus its cost and depreciation.

Overall, companies have several tools to calculate the return on IT investments or how they will impact the bottom line. When figuring the real cost of IT projects, Norton recommends that a company factor in training and consider hiring a full-time

project manager to lower the risk that the investment may not produce the return the company is expecting. He notes that most IT projects take longer to complete than initially projected, and companies should take care to add more development time to their expense and earning projections.

"What is more important than calculation of respective returns is what could go wrong and how severe the consequences are if you don't get it right," Norton concludes. ▀

Are there business terms you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

MOREONLINE

For more information about measures of return, visit our Web site. www.computerworld.com/more

Formulas and Definitions

ROA

Return on assets: Income generated from operating your business divided by total assets such as cash, inventories, accounts receivable and equipment, including IT investments

$$\frac{\text{Income}}{\text{Assets}} = \text{ROA}$$

EXAMPLE

$$\frac{\$1.1\text{M}}{\$5.3\text{M}} = 20\%$$

ROE

Return on equity: Net income (including interest income or expense) divided by common equity, which represents the amount invested by your common-stock owners

$$\frac{\text{Net income}}{\text{Common equity}} = \text{ROE}$$

EXAMPLE

$$\frac{\$1.1\text{M}}{\$4.4\text{M}} = 25\%$$

ROI

Return on investment: Cash inflow or savings from an IT investment divided by total cash outflow for the investment (including implementation, operations and maintenance) minus the depreciation of the asset (There's no universal calculation for ROI)

Competitive advantage: Windows NT on Compaq

Inside information: *Windows NT Advantage*

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The background features a magazine cover for "Windows NT Advantage". The cover includes the title "Windows NT Advantage" in large letters, the subtitle "The Strategic Information Magazine for IT leaders", and the publisher "COMPUTERWORLD ENTERPRISE PUBLICATIONS". There is a "Subscribe" button and text that says "Join us! It's easy, and it's free -- just enter your e-mail address and click 'Subscribe Me'". Below this is an "E-mail" field. To the right, there is a section titled "Upcoming" with articles like "Deploying Windows NT on the..." and "How to deploy Windows 2000 in minutes".

COMPUTERWORLD

JOE AUER/DRIVING THE DEAL

Maximize your power in a sole-source deal

THE ABSENCE of competition can make any deal arduous. You're starting at a negotiating disadvantage, and if you aren't begging yet, you soon will be when the supplier figures out its position. The only way to avoid groveling is to create defenses — or the illusion of them. Having negotiating power is the best defense against a cozy incumbent offering higher costs for the same service. If you don't have any negotiating power, create some. Here's how:

■ **First, issue a request for proposals (RFP).** Even if the RFP is issued only to the incumbent, it gains you power, especially if you can keep the vendor's solo status a secret.

I'm not suggesting you lie about what you're up to — just that you shut down the normal information flow that lets the vendor know everything that's going on in your organization.

■ **Second, wait for the response.** Suppliers tend to fear the unknown and will suspect the worst, responding with an aggressive deal to keep the account.

A major Midwestern food company saved \$3.3 million on a version of that strategy. (The whole story will appear in a future column.)

■ **Third, review the supplier's**

proposal, and refine your negotiating strategy based on the supplier's response to your stated requirements. You now have leverage. Go for what's important, striving always to reduce or limit the price and risks while obtaining more contractual protections.

Incidentally, you can also add new contract issues to the bid requirements and correct some relationship problems you may have had with the vendor.

■ **Finally, begin to negotiate aggressively with the supplier.** Stress that you may prefer to renew the relationship, but it must earn the business to continue. Remind the vendor that it is a preference, not a need. Press on with the negotiations, but build in some downtime to

let the supplier think you may be negotiating with others.

Your supplier probably suspects that you don't have any immediate alternatives. Your best defense is to point out that there are always alternatives. Then start discussing alternatives that don't include the incumbent supplier.

Proven Play

Note: Developing the best alternative to a negotiated solution before you negotiate is a proven strategy. Focus your supplier's attention on keeping your business rather than maximizing its position.

Recently, in a software acquisition, a supplier confronted a sophisticated customer that had a good deal-making procurement process and

commented, "Gee, your procurement process takes too much time." That comment just happened to be skillfully laid before the customer's technical architect, as well.

That popular vendor ploy is normally effective for two reasons: First, it can disarm the procurement process by convincing the technical architect that the process itself causes unreasonable delays and puts the project time line in jeopardy.

The alarmed technical person then pressures the "bottlenecks." That divides the customer's team as it pits technical person vs. procurement person.

Second, that ploy attempts to eliminate competition by suggesting that the lengthy investigation and evaluation of others is unnecessary because the perpetrating vendor could immediately provide the solution, were it not for that cumbersome procurement process.

Fortunately in that case, the technical architect was experienced and trained in vendor ploys.

He recognized the ploy for what it was and clued in the

rest of the acquisition team.

The team responded to the supplier in the best possible way: "This is our procurement process. We use it for all procurements, and you are expected to adhere to the process just as your competitors do. Also, please be reminded you are under evaluation,

and any more subversive behavior will be viewed very negatively."

The user also stressed to the unruly supplier that careful attention was paid to determining requirements so that fact-based decisions could be made. And with all the clarity the statement deserved, the user added, "We take the time to do it right the first time."

By taking that stance, the user instantly disarmed the ploy and refocused the supplier's attention on meeting requirements and keeping up with its competition.

It also sent a clear message that the customer was committed to a disciplined process that could not be subverted — and was in control of the relationship.

Now that's a recipe for a successful deal. ■



JOE AUER is president of International Computer Negotiations Inc. (www.dobetterdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

WORKSTYLES

What It's Like to Work at ... United Media

Interviewee: Bobby Chowdhury, chief technology officer
Company: United Media, cartoon strip syndication and licensing company for "Peanuts," "Dilbert," "Marmaduke" and others.
Main location: New York
Number of IT employees: 18
Number of employees (end users): 150 in New York, 20 in Cincinnati and 20 in Tokyo. "Also, our talent — like Charles Schultz [creator of "Peanuts"] and Scott Adams [creator of "Dilbert"] — are our end users because they send content to us via the Internet, our bulletin-board system" and so on.
Dress code: No jeans.
Hours: "In a good week, people are

putting in at least 45 to 50 hours. That's on the low side. From Memorial Day to Labor Day, the company closes at 1 p.m. on Fridays — but in IT, we set up a rotation among pairs of people, so IT staff members get off early every other Friday." Why such long hours? "We support not only the software development and operations of our licensing and syndication business, but also the network infrastructure for the Dilbert Zone (www.unitedmedia.com/comics/dilbert) and Comics.com. Type of offices: "This building used to be a printing plant, so the raw space had 50-ft. ceilings. We left those in the lobby and in the communal areas; other areas have drop

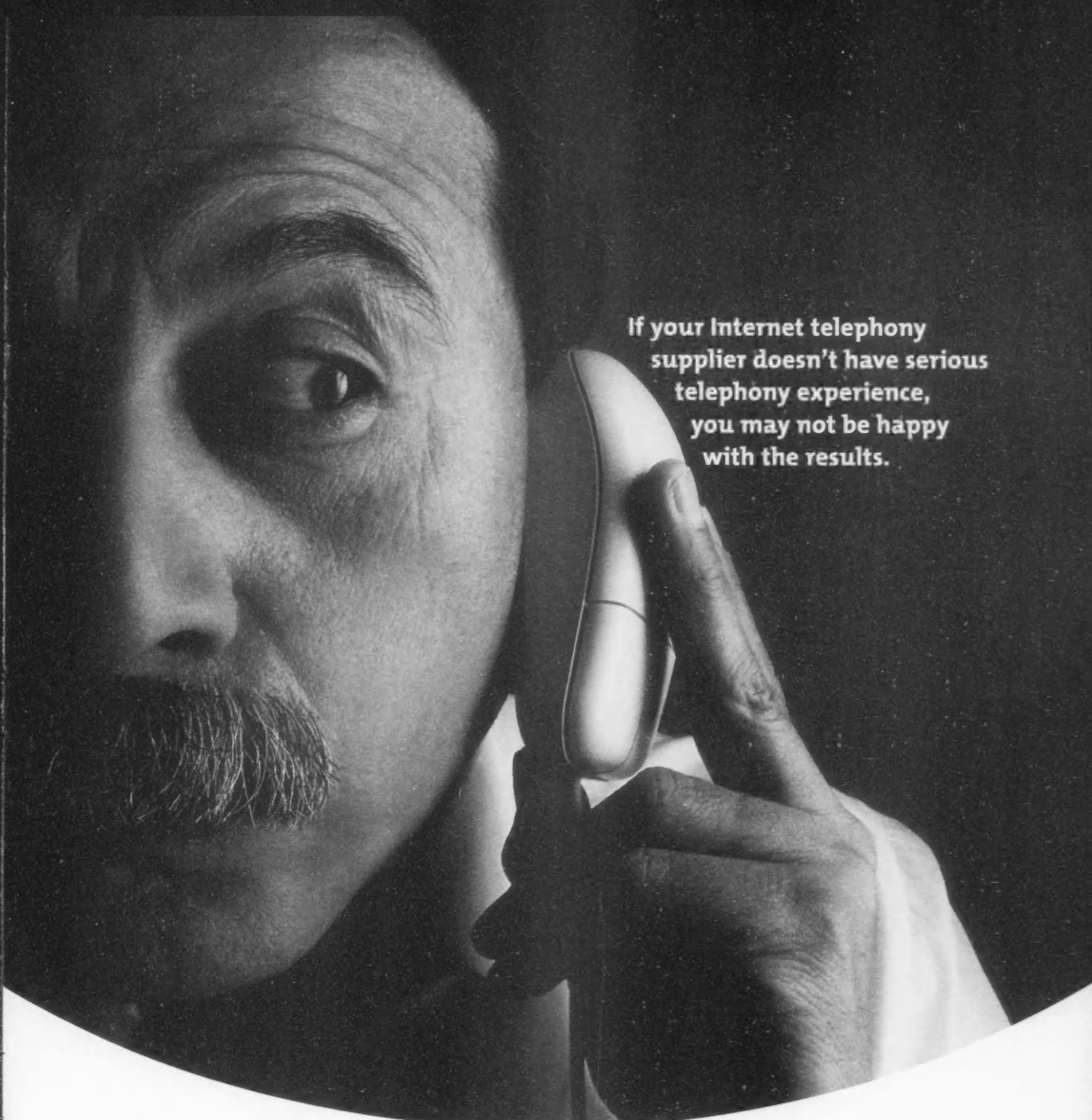
ceilings. We have an area in the middle of the floor called The Zone, where we have brightly colored, oddly shaped furniture. We have offices around the perimeter and cubicles in the middle." Decor: "Everyone who comes here for meetings is like, 'Wow!' We have a huge Snoopy in an airplane — as the Red Baron — hanging from the ceiling in our lobby, and we have several life-size art pieces depicting Snoopy characters." Must people carry beepers? "Yes, we're on-call 24 hours. Last week, I went to a friend's wedding with my pager on — it looked good with my suit, though." Percentage of staff that telecommutes on a given day: Zero. On-site day care? No. Cafeteria: Lunch room with a coffee machine, microwave, vending machines, tables and chairs. Free refreshments: Coffee, tea and water. "Also, the first Friday of

every month is Bagel Day — at 8 a.m. in the lunchroom, the company provides bagels, croissants, sticky buns [and] juices." The biggest complaint: "Sometimes, we might get an e-mail on Friday that a new employee is starting on Monday, and then we are in a panic to set [up the phone], configure a PC, set up applications support for them [and] get the manuals together." Where the office gossip: The lunchroom or The Zone. Little perks: An IT lunch a couple of times each year. Other companywide/department perk: "The Christmas party at Au Bar, a club in Midtown [Manhattan], with a DJ, a catered buffet and open bar." Would employees feel comfortable e-mailing the CEO? "Yeah, total-

ly. We are not hierarchical. Different points of view are very much valued." Quote: "From an IT perspective, this is a superb place because we get exposure to all this great technology — our applications run the gamut across a range of operating systems and platforms — and my boss gives us a lot of responsibility and credit. We are a favored bunch. So we get to do good work, [and] you can see the productivity and the results immediately." — Leslie Goff



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A black and white photograph of a hand holding a champagne flute glass. The glass is filled with a bubbly liquid and is positioned against a large, white, oval-shaped balloon. The background is dark and out of focus, showing other balloons and what appears to be a party setting. The text "Everything was great. Then you got promoted." is overlaid in white on the upper part of the image.

Everything was great. Then you got promoted.

As if your IT workload wasn't heavy enough, suddenly you're also expected to handle revenue issues. Locate new business opportunities. And find new revenue streams. If it hasn't happened already, it will. When e-services transform the Internet, opportunities will explode exponentially. Businesses will scramble for a piece of the action. And servers will make all the difference. Fortunately, you've got the HP 3000 Business Server. It has the proven reliability to handle the coming onslaught of information, 24 hours a day. It's compatible with the applications you'll need. And it's easily integrated into an e-services environment with UNIX[®] and Windows NT[®]. What more could you ask for? Oh yeah, a vacation. www.hp.com/go/3000

Propelling the next E. E-services.



TECHNOLOGY

77

API TRACKS APP VALUE

Imagine if your network manager could see not only which applications had failed, but also which failed apps generate the most revenue and should be restored first. J. P. Morgan and Computer Associates have created an application programming interface to do just that and hope to make it a public standard. **79**

NEW WAY TO SECURE KEYS

Arcot Systems' implementation of camouflage technology (hiding public keys in a blizzard of valid-looking fakes that can fool attackers) offers nomadic users a level of security once available only through smart cards. One hospital is using camouflage to let off-site doctors securely access patient records. **85**

TRAINING TOOLS OPEN UP

As training systems vendors such as Pathlore Software add Web hooks to their once-proprietary wares, businesses can use a browser to run courses from multiple vendors — while tracking management information, like attendance records, centrally. **79**

Y2K FIX UNLOCKS MAINFRAME DATA

When two large customers switched mainframe report management tools to avoid the

year 2000 bug, they got an unexpected bonus: Web access to mainframe data. **85**

EMERGING COMPANIES

E-commerce without the FedEx truck: Start-up Preview Systems Inc. thinks it has the answer to safe, effective distribution of digital goods for both corporate and retail customers. **88**

BUT I DON'T LIKE SPAM

E-mail marketing campaigns are a waste if you wind up clogging the wrong in-boxes. New tools let even nontechnical users create customized e-mail. **61**

WHITHER WINDOWS CE?

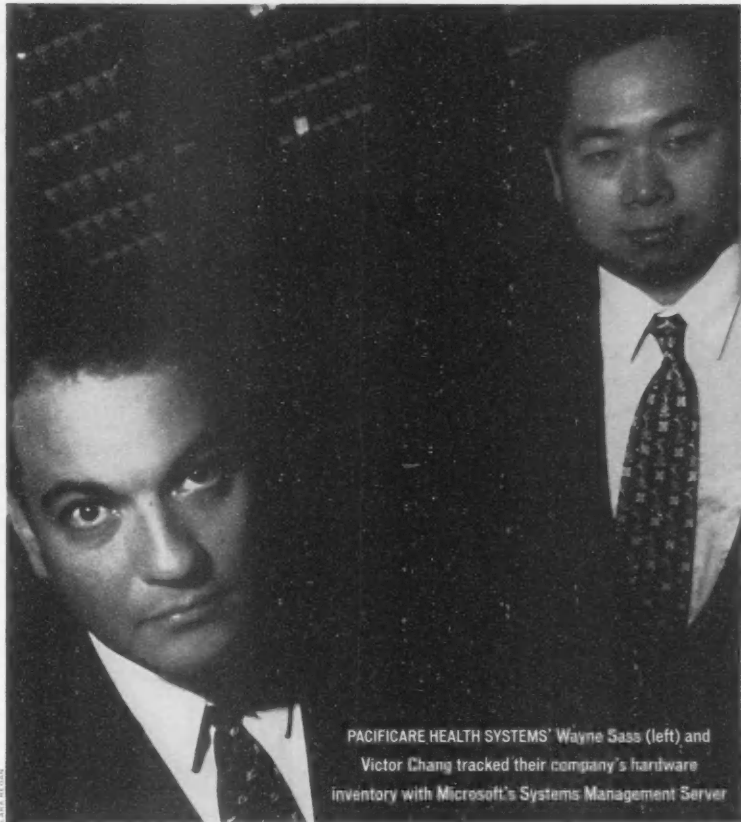
With an interface that strikes many as clunky compared with 3Com's Palm OS, Microsoft's Windows CE operating system for handhelds faces an uphill battle. Many analysts expect a dramatic revamp next year — but Redmond is strangely mum. **82**

FLASHBACK

In 1973, Bob Metcalfe created Ethernet, the technology that made the first LAN possible. **96**

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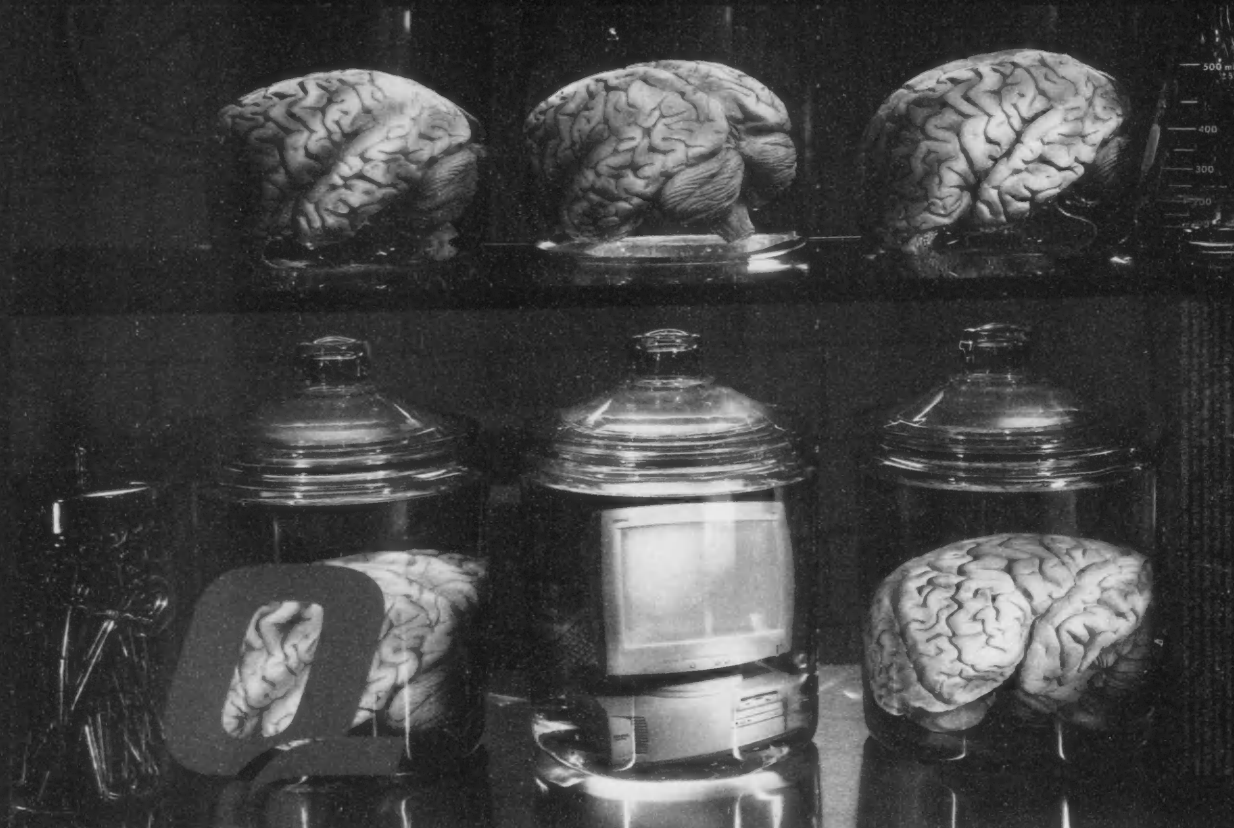


PACIFICARE HEALTH SYSTEMS' Wayne Sass (left) and Victor Chang tracked their company's hardware inventory with Microsoft's Systems Management Server

GUARDING YOUR HIDDEN IT ASSETS

KEEPING TRACK OF EQUIPMENT and software is the cornerstone of good total-cost-of-ownership management, yet few organizations have formal asset management programs. Four companies we talked with took four very different routes to identify and manage IT assets. The results may surprise you.

92



Intelligent?

Try "ingenious." How better to describe a PC that makes your life so much easier in so many ways—and at so little cost? Industry-leading management tools make Compaq Deskpro as cooperative a machine as you could dream up. And Deskpro is designed



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New API Forges Link Between Applications, Business Value

J. P. Morgan, CA propose plug-ins that would let customers manage applications based on their impact on the business

AN APPLICATION programming interface (API) developed by J. P. Morgan & Co. and Computer Associates International Inc. may give information technology departments and business managers a common console for managing applications based on their business impact.

The companies have submitted the API for consideration as a standard by The Open Group LLC in Palo Alto, Calif. J. P. Morgan's Chief Technology Officer **Michael Reilly** and Vice President of Enterprise Management **Jonathan Elvers** recently explained the API to *Computerworld* senior writer David Orenstein.

Q: What created the need for the API?

REILLY: We have effectively im-

grated our front-office, revenue-generation applications from a traditional mainframe world to a distributed world with a lot of real-time connectivity. We have been increasingly frustrated with the lack of progress we're seeing on unifying frameworks that can actually manage a business process. . . . I would like to be able to track the cash flows or the transaction counts and monitor and manage that with the same integrated set of tools that would manage the databases and the hardware platforms that support that revenue stream.

Q: Is the API already developed or just a concept?

REILLY: We have a ref-

erence implementation of an API set . . . a plug-in piece of code that would run embedded in our applications that would allow us to manage the application in a consistent fashion. We have donated that to the Open Group as a foundation for a possible industry standard.



J. P. MORGAN'S JONATHAN ELVERS says implementation has "ground rules" that SNMP doesn't provide

Q: Let's go into how the technology works.

ELVERS: We're building a standard framework that multiple applications can use to provide information about what's going on inside the application and also providing a mechanism to control the application. The implementation is in C. You add these calls into the source code

of your business program [and they] essentially create a two-way interface bolted on to the side of your running programs.

Q: You're using this in conjunction with CA's Unicenter?

REILLY: The specification we've built does not presuppose Unicenter. The ideal would be [that] two to three years from now, multiple vendors would have this API embedded in their code. If we were to deploy another module of PeopleSoft or SAP . . . their code would come instrumented with this industry standard, and it would just plug in to [any] management framework.

Q: What challenges need to be overcome?

ELVERS: I don't think the implementation is technologically difficult. We had our architects

lay down the ground rules — it must be multithreaded, it must run on multiple platforms, it must be written in C so we can use it in our programming languages, it must be able to run multiple instances. A lot of these rules are things, for example, that [Simple Network Management Protocol (SNMP)] doesn't do.

Q: What kind of a time frame do you see for adoption?

ELVERS: At the end of this month, the technical review board of the Open Group [decides if the standard will go through] the fast-track process. If they approve it, I think it could be a standard at the end of September or October. ▀



J. P. MORGAN'S MICHAEL REILLY says down the road, "the ideal" would be for multiple vendors to have the API embedded in their code

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Web-Enabled Courseware Easier to Use

New products let companies build, operate and manage courses on one system

BY BARB COLE-GOMOLSKI

Companies that sell training systems have been bragging about their Web hooks for awhile, but full Web support is really just starting to emerge.

The payoff from those Web hooks would be the ability to run courses from multiple vendors using only a browser and still track management information, such as attendance records, centrally.

This week, Pathlore Software Corp. in Columbus, Ohio, will announce Phoenix Web, a training management system designed to run courses built with the company's own course development tool as well as courses built with other vendors' tools.

Unlike previous versions of Phoenix, which required special software on the client to run other companies' courses through the Web, developers can now add a few lines of

JavaScript to a Web course, then use a browser to launch and manage it in Phoenix Web.

Pathlore's product is one of a handful of so-called integrated training management systems that let companies build, run and manage training courses with one system. The software is available now for Windows NT and Microsoft Internet Information Server. It requires a SQL database.

Competitors in this space — which are migrating their once-proprietary offerings to the Web — include WBT Systems Inc. in San Francisco, Docent Inc. in Mountain View, Calif., and Lotus Development Corp. in Cambridge, Mass.

According to International Data Corp. (IDC) in Framingham, Mass.,

about two-thirds of companies use Internet-based training. The main advantages are "that students can learn on demand and in real time," said Colleen Shutrump, an IDC analyst.

Trouble-free Training

Phoenix Web will help Corning Inc. deliver training on demand to users of its PeopleSoft Inc. enterprise resource planning system without touching end users' desktops, according to Steve Cooper, Corning's IT director. Previously, Corning had to distribute a course "player" — a small bit of code — to users. Like most companies, Corning uses a combination of packaged courseware and training courses it has developed in-house. It delivers the courses through LANs, intranets and the Internet.

Pathlore's direction appeals to Deborah Barrett, manager of training and educational services at Automatic Data Processing Inc. in Hoffman Estates, Ill. The company is mov-

Students can learn on demand and in real time.

COLLEEN SHUTRUMP, ANALYST, IDC

ing from mainframe-based training to PC-based courses that will be delivered through the corporate network and the Internet. "We buy courses and build our own," Barrett said. To run courses over the Internet and manage them centrally would be useful, she said. ▀

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Training Distribution

METHOD	1997	2000*
CD-ROM	49%	80%
E-mail	34%	56%
Internet	19%	58%
Intranet	24%	70%
LANs	32%	52%

* Projected
Based: 85 U.S. companies; multiple responses allowed
SOURCE: AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT, ALEXANDRIA, VA

BRIEFS

Orbital Revamp

Orbital Software is shipping Organik

KnowledgeWare 2.0, knowledge management software that directs user queries to electronic data or "expert" employees. The software has a built-in SQL database and a Web server, the Mountain View, Calif., company said.

It costs \$100 per seat.
www.orbitalsw.com

New Oracle HR Tools

Oracle Corp. last week added a ver-

sion of its human resources software to its FastForward line of fixed-price application bundles for small and midsize users. Package pricing starts at \$172,000 and includes installation consulting, training and support for a year. Oracle also announced a

companion application that lets employees update their own records.
www.oracle.com

SAP Releases Retail R/3 for Small Users

SAP AG has released a retail-industry version of its R/3 application package for small and midsize users. SAP Accelerated Retail initially supports fashion companies and discount supermarkets, SAP said. The German vendor's midmarket offering bundles preconfigured versions of R/3 with Windows NT servers and databases [CW, May 31].
www.sap.com

Sybase Adds Linux Version of SQL

Sybase Inc. is shipping a Linux version of Sybase SQL Anywhere Studio, software for building mobile and embedded databases. The Linux version supports Red Hat Software Inc.'s Linux 5.1, according to the Emeryville, Calif., company. Linux developers can use the software to embed a relational database management system in corporate applications, deploy the applications to clients and synchronize data among enterprise and workgroup servers and laptops, handhelds and embedded devices.

The software costs \$399 for one user and \$999 for five users.
www.sybase.com

PeopleSoft to Resell Procurement Tools

PeopleSoft Inc. has announced plans to resell Internet-based procurement software developed by Commerce One Inc. in Walnut Creek, Calif. The Commerce One software, which lets business users buy office supplies and other goods online, is available from PeopleSoft under the name Procurement Community.

Vitria Upgrades Integration Software

Vitria Technology Inc. in Mountain View, Calif., last week released an upgrade of its enterprise application integration software with a new graphical modeler for linking systems. BusinessWare 2.2 also includes new visual debugging tools, Vitria said.
www.vitria.com



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When Customers Want E-Mail, Not Spam

BY DOMINIQUE DECKMYN

Whether it's personalized newsletters or targeted promotions, businesses are waking up to the potential of opt-in e-mail.

Opt-in e-mail, or permission marketing, differs from much-maligned spam in that the customer has agreed to receive it. It's not only cheap (1 to 25 cents per message) and exceptionally effective (an 18% response rate, compared with 0.65% for banner ads, according to a recent study), but it's also easy.

At least a half-dozen tools released in the past few months allow nontechnical staff to create personalized newsletters and marketing campaigns. Some, such as Accucast from Atlanta-based Socketware Inc., are sold as stand-alone products, but an increasing number are rented out under an application service provider model, allowing customers to access them remotely with a browser.

Online health store MotherNature.com Inc. in Concord, Mass., has been experimenting with opt-in e-mail for about six months, sending a personalized newsletter to about 15,000 customers. The company wanted to manage its own e-mail campaigns, rather than call in an e-mail service bureau. "I wanted to build the knowledge of what works and what doesn't," said Jeffrey Steinberg, MotherNature.com's vice president of marketing.

Pure e-commerce companies have been the first to embrace personalized e-mail, but others are joining in. Brian Williams, associate dean of admissions at Providence College in Providence, R.I., is preparing a campaign to attract high school seniors.

The school had used a free-ware list server called Majordomo, which allows users to subscribe and unsubscribe to a mailing list. But Williams said the school ended up "spamming by accident" — for example, telling a senior in California about a reception in Chicago.

Williams said he opted for the \$2,000 GT/Mail package from Los Angeles-based GuestTrack Inc. because it allows for

the creation of both personalized e-mail and Web pages, and "it seemed the least labor-intensive."

The school's personalized newsletter will be created by four nontechnical admissions staff members with no help

from the information technology department, Williams said.

Seth Godin, author of *Permission Marketing* and vice president of direct marketing at Yahoo Inc. in Santa Clara, Calif., advised "a new way of

thinking" when entering permission marketing. Companies must focus on developing a long-term relationship with customers, he said, rather than "obsess with the first contact and then drop the ball." ■

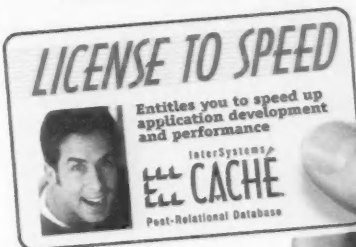
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Microsoft Mum on New CE Interface

Low-key Windows CE revamp in works to loosen Palm handhelds' grip on market

BY JAMES NICCOLAI
SAN FRANCISCO

MICROSOFT CORP. had plenty to say about set-top boxes, gaming machines and even gas pumps at its Windows CE developer conference here last week, but the future of Windows CE-based palm-size PCs remains cloaked in mystery.

The software giant has had a tough time battling rival 3Com Corp.'s popular Palm hand-

helds. Some analysts have said Microsoft erred when it scrunched the familiar but feature-heavy Windows interface onto a small handheld screen.

"The Windows metaphor that works on the desktop doesn't work on a device like [the palm-size PC]," said Matthew Nordan, a senior analyst at market research firm Forrester Research Inc. in Cambridge, Mass.

Even Microsoft acknowledged that its creation isn't perfect, although the company maintained that palm-size PCs are easy to use. "It is fair to say that in certain situations, a task could take one or two clicks more [on a Windows CE-based palm-size] than on, say, a PalmPilot," said Phil Holden, a Microsoft group product manager.

Microsoft engineers are "looking at understanding what the right user interface is for this type of device," Holden said.

Silent Strategy

But any discussion of that project, code-named Rapier, was conspicuously absent from last week's conference. Moreover, Microsoft won't even brief analysts on its plans, according to Nordan. "They don't want to give anything away [to 3Com]," he said. The fruits of the Rapier project could appear by the end of next year, Nordan said, and are likely to result in a simpler

Handheld Handful

WINDOWS CE DISADVANTAGES:

■ Palm's market share (and mind share)

■ Clunky interface

■ Internal competition with Embedded NT

WINDOWS CE ADVANTAGES:

■ Embedded market - developers are tired of DOS

■ Vertical market - Windows synergy counts

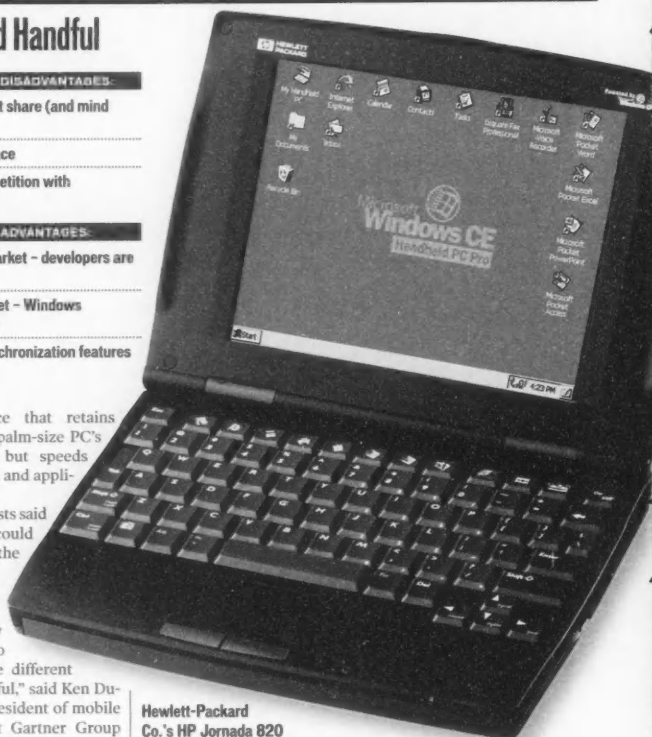
■ Improved synchronization features

user interface that retains much of the palm-size PC's functionality but speeds access to data and applications.

Some analysts said the changes could transform the Windows screen beyond recognition. "They would have to make it quite different to be successful," said Ken Dulaney, vice president of mobile computing at Gartner Group Inc. in Stamford, Conn.

Meanwhile, Microsoft continues to make incremental improvements to its current handheld platform. The company last week announced new software called ActiveSync 3.0 that was designed to make it easier for users to synchronize desktop data with their palm-size

Hewlett-Packard Co.'s HP Jornada 820 handheld running Windows CE



PCs. ActiveSync 3.0 is expected to be available in the fall. Analysts said Windows CE could win big in embedded markets, where developers have begun to tire of MS-DOS, and in vertical markets, where the synergy among various Windows platforms is attractive to developers.

"Embedded systems, vertical markets: That's where Microsoft's strength is right now. The legacy with Windows is very important there, and it's starting to replace DOS in that category," Dulaney said.

All-Purpose Push

In a series of speeches last week, Microsoft executives sought to position the slimmed-down Windows operating system as an all-purpose platform that can suit the myriad networked devices expected in the future.

Demonstrations at the event

included a new gaming system from Sega Dreamcast, which takes advantage of the DirectX support soon to be added to the platform, as well as a set-top box from General Instruments Corp. with Web-browsing capability. Observers noted that Microsoft didn't spell out at the conference how Windows CE and Embedded NT will fit side by side. "That is characteristic of a real battle within the company over what the embedded OS will be," Nordan said.

However, Holden said the two operating systems are complementary. Windows CE works with smaller applications. Embedded NT, which uses more memory, is more suited to routers or to server-based applications that need more security and stability, Holden said. ■

Niccolai writes for the IDG News Service in San Francisco.

It is fair to say that in certain situations, a task could take one or two clicks more [on a Windows CE-based palm-size] than on, say, a PalmPilot.

PHIL HOLDEN,
PRODUCT GROUP MANAGER,
MICROSOFT

Microsoft TVpak Runs TV-Centric Appliances

New venture mixes TV and Internet

BY DORTE TOFT
BOSTON

Making another foray into the world of television, Microsoft Corp. last week unveiled the Microsoft TV Platform Adaptation Kit (TVPak), consisting of client software for use in TV-related devices in the

household and server software for network operators.

The product will be released later this year, Microsoft said. The client software for set-top boxes, TVs and Internet terminals will be based on the Windows CE operating system. However, network operators won't be limited by the Windows graphical user interface.

The server software is built on Windows 2000 Server, BackOffice products and technolo-

gy from WebTV Network Inc., a Microsoft company.

TVpak is another push by Microsoft into the business of combining TV and the Internet for entertainment and e-commerce purposes. In recent years, Microsoft has made heavy investments to get a foothold in the area, far from its Windows-based PC stronghold. ■

Toft writes for the IDG News Service in Boston.

BRIEFS**Micron Notebook**

Micron Electronics Inc. is shipping a TransPort NX notebook computer based on the new 400-MHz Mobile Pentium II processor from Intel Corp. The system has a 15-in. screen, 128M bytes of synchronous dynamic RAM, a 140-byte hard drive and a 24-speed CD-ROM drive, according to the Nampa, Idaho, company.

The laptop also offers two Universal Serial Bus ports and a multi-use bay, which can house an additional hard drive (up to 14G bytes), a second battery and either a floppy drive or an LS-120 drive.

The TransPort NX costs \$3,099. www.micronpc.com

Record PC Sales In Asia-Pacific

In the first quarter, the Asia-Pacific PC market (excluding Japan) saw its highest unit shipments ever, according to Framingham, Mass.-based market research company International Data Corp. (IDC).

Total PC shipments reached 2.95 million, almost 25% higher than the year-earlier quarter's 2.37 million. The big volume gains came from continued strong growth in China, Australia, India and Taiwan. IDC said it expects total shipments of 23.9 million units in 1999.

Chip Vendors Form Global Council

Members of semiconductor industry groups from around the world last week launched the World Semiconductor Council to enhance cooperation among vendors and governments. The council said it will promote discussions on industry standards, health and safety, and intellectual property rights.

Iomega Storage Drive Targets Notebooks

Iomega Corp. has announced the Clik PC Card Drive, a removable storage drive for notebook PCs. The card fits into a PC card slot and offers a transfer rate of up to 600K byte/sec., according to the Roy, Utah, company.

It costs \$199.95. www.iomega.com

Panasonic Gets Tough In Laptop Arena

Panasonic Personal Computer Co. has released Toughbook 27, a ruggedized laptop with a 300-MHz

Pentium II processor from Intel. The system includes a 6G-byte hard drive and 64M to 192M bytes of RAM, according to the Secaucus, N.J., company.

Pricing starts at \$4,769. www.panasonic.com

Addonics Rolls Out New Thin Client

Addonics Communications Inc. has announced the ART 4000, a Windows-based remote terminal. The

thin-client system supports Citrix Systems Inc.'s new MetaFrame 1.8 and WinFrame 1.8 terminal services software, according to the Fremont, Calif., company.

The ART 4000 costs \$699. www.addcom.com

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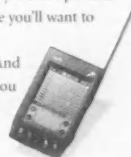
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Year 2000 Fix Unlocks Trove of Mainframe Data

Two customers switch mainframe tools for date reasons and get Web access to boot

BY DOMINIQUE DECKMYN

FOR TWO LARGE organizations, a year 2000 migration is unlocking vast amounts of legacy mainframe data to make it available over the Web.

Travel reservation company The Sabre Group Holdings Inc. in Fort Worth, Texas, had been using IBM's Report Management and Distribution System (RMDS) to manage up to 30,000 reports generated every day by several mainframe applications.

The reports include budgets, travel information and cargo lists. Some are stored on main-

frame hard drives, others on tape, and some today can be accessed only from microfiche. Users have accessed them from 3270 terminals or PCs running terminal emulation software.

But the RMDS version the company was using wasn't Y2K-compliant, said Harry Fields, senior engineer at Sabre. And although IBM offered a Y2K-compliant product, it would have required a complicated upgrade. So Sabre opted for Electronic Document Warehouse from Rye, N.Y.-based Mobius Management Systems Inc. The software is priced from \$10,000 for

a Windows NT version to several million dollars for some mainframe configurations.

Sabre's 200,000 users, who are mainly travel agents, will be able to access some 500,000 reports using terminal emulation, a Windows-based client or, by early next year, a browser.

Barry Bell, systems programming manager at Information Technology Services (ITS) in Raleigh, N.C., which

provides information technology services to the state of North Carolina, tells a similar story. The state is moving off RMDS for year 2000 reasons and in the next 60 to 90 days will bring online a new document management system that will allow 70,000 state employees and suppliers to access mainframe-generated documents through their browsers, Bell said.

ITS started replacing RMDS last August and since March has been implementing X/PTR 3.8 from Dallas-based Systemware Inc. The software runs on IBM mainframes and is priced from \$50,000.

Many financial, insurance, utilities and telecommunications customers use report management software for their legacy applications, said Andrew Warzecha, an analyst at Meta Group Inc. in Stamford, Conn. The Web capabilities included in the latest versions of those applications allow customers to put the information to new uses, such as online bill presentment, Warzecha said. ■

Leveraging Legacy Documents

Document management technologies oriented toward legacy systems are one of the fastest-growing segments of the document management market

TECHNOLOGY	1998	1999*	5-YEAR GROWTH RATE 1998-2003*
Computer output on laser disc	\$1.49B	\$2.21B	29%
Report distribution systems	\$804M	\$1.12B	31%

*Projected

SOURCE: ASSOCIATION FOR INFORMATION AND IMAGE MANAGEMENT INTERNATIONAL

Tightening Security Through 'Camouflage'

Moving the processor from the smart card to the server makes keys easier to manage

BY ANN HARRISON

Cryptographic camouflage. That's the unique way St. Joseph's Hospital in Marshfield, Wis., is protecting the private keys used to retrieve information encrypted with a public key in the process known as public-key infrastructure.

Public-key infrastructure has high potential as an authentication tool, but its deployment has been hampered by generally poor key management. Viruses can collect private keys from desktops and ship them to crackers, who then try to guess the passwords that protect them.

As a defense, information technology departments can make the key space too large to search, require long passwords or place keys on smart cards protected by passwords.

Cryptographic camouflage places keys in a software container that's activated when a user enters a personal identifica-

tion number. The system makes sure that many false ID entries produce similar-looking false decryptions, concealing the genuine credentials in a bunch of fakes that look valid enough to fool an attacker.

Accessing Records Off-Site

The hospital is using camouflage to let off-site doctors access patient records on the Internet.

The software, called WebFort, was developed by Arcot Systems Inc. in Palo Alto, Calif.

With WebFort, physicians must no longer wait nine days for printed discharge summaries, said Steve Pelton, St. Joseph's CIO.

Ram Varadanajan, Arcot's vice president of research and development, said that unlike browser-based digital certificates, WebFort lets nomadic users pull camouflage technology directly from the St. Joseph's Web site that holds

doctors' credentials. "You've taken the processor out of the smart card and moved it to the server," Varadanajan said.

WebFort is integrated into St. Joseph's back-end clinical patient record database — IDX Systems Corp.'s LastWord, which serves as the backbone for medical and billing information.

Pelton said the hospital uses Secure ID smart cards from Bedford, Mass.-based Security

Dynamic Technologies Inc. on its dedicated network but WebFort works better for off-site users.

Easy Distribution

"The important part is the ease with which we can distribute the [WebFort software] tokens over the Internet without the PC that the physician will be using," Pelton said.

Pelton said he likes the fact that the software smart card is less expensive than physical smart cards and doesn't require a card reader or a high-end PC.

"The idea that [public-key infrastructure] and authentication mechanisms need to be easier to deploy is a good one," said Abner Germanow, an analyst at International Data Corp. in Framingham, Mass., adding that the technology could be applied to different types of organizations.

Germanow said the real test will come when WebFort is scaled up to large numbers of users and when its long-term costs are evaluated.

WebFort is available now for Windows NT, Solaris and HP-UX. Pricing starts at \$15,000. ■

Vendor Group to Develop IP-Based Wireless Services

BY DOUGLAS F. GRAY
LONDON

Nine of the world's largest wireless communications companies last week announced they will form a focus group to develop and promote IP-based wireless technology for a third-generation mobile telephone and data transmission system.

The new group, called 3G.IP, includes British Telecommunications PLC, AT&T Corp., Wireless Services Inc., Rogers Cantel Inc., Ericsson Inc., Lucent Technologies Inc., Nokia Corp., Nortel Networks, Telefonor AS and Telecom Italia Mobile SpA.

The group said it will support the development of next-

generation wireless services — including enhanced voice, high-speed data, Internet access, and imaging and video conferencing — on an IP-based network architecture.

The companies said they plan to work toward the development of the system using Wireband Code Division Multiple Access and EDGE broadband interfaces.

The group will also propose standards for handsets that will use those technologies. ■

Gray writes for the IDG News Service in London.

Software Distribution Tool Goes Corporate

BY MATT HAMBLIN

A new software distribution tool is intended to solve the problem of how to cut support

costs at large companies that have thousands of PCs.

InstallShield Software Corp. in Schaumburg, Ill., recently

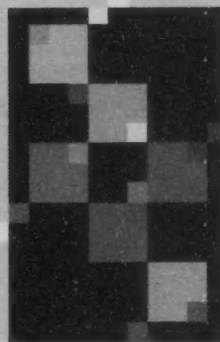
rolled out NetInstall for corporate information technology departments. The product is already widely used by inde-

pendent software vendors and by companies in Germany.

NetInstall's differentiator is that it distributes software updates to servers and from there to individual PCs, analysts said. Most competitive prod-

ucts, such as Microsoft Corp.'s Systems Management Server (SMS) and products from Tivoli Systems Inc. and Computer Associates International Inc., put the distribution tools in each PC. InstallShield claims its method improves reliability and flexibility.

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www.hexaware.com

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There's a big difference in cost savings.

THOMAS HEUMANN,
PROJECT MANAGER,
MERCEDES-BENZ LEASE FINANZ

Thomas Heumann, a project manager at Mercedes-Benz Lease Finanz in Stuttgart, Germany, said his company has been successfully using NetInstall for frequent software updates to 1,200 desktops in 35 offices throughout Germany since September 1998. He said every upgrade he has made with NetInstall has succeeded for every machine on his network.

And "there's a big difference in cost savings" when using NetInstall rather than manual distribution, Heumann added, though he declined to be more specific. "We have a huge amount of software updates."

Heumann said NetInstall provides more flexibility than SMS, which Mercedes-Benz also uses.

Matthew Nordan, an analyst at Forrester Research Inc. in Cambridge, Mass., said large corporations use SMS more than any competing tools, which will make it hard for entries like NetInstall.

"SMS is not as robust as other products, but it is really cheap and has five times the penetration of other products — which doesn't bode well for new entrants," he said.

Making software distribution tools work is difficult because so many variables in the network and the desktop — like the operating system, the BIOS, the mix of applications and so on — have to mesh. Because of that, companies stop using the tools more than 70% of the time, Nordan said.

NetInstall will cost \$875 for 25 nodes. ■

BRIEFS

Symantec Upgrades PCAnywhere

Symantec Corp. is shipping PCAnywhere 9.0, remote control and file transfer software for mobile users. The software lets administrators preconfigure installation and runtime settings during remote installation. It also offers Windows NT authentication capabilities for remote user authentication, according to the Cupertino, Calif., company.

The software costs \$169, with volume licensing available. www.symantec.com

D-Link Releases Ethernet Switches

D-Link Systems Inc. has released the DSS-Series, a line of 10/100M bit/sec. Ethernet/Fast Ethernet network switches. According to the Irvine, Calif., company, the switches eliminate unnecessary traffic and relieve congestion by providing dedicated bandwidth at each port. The desktop versions come in five-, eight- and 16-port densities, and rack-mountable versions are available in 16- and 24-port densities.

Pricing for the switches ranges from \$149 to \$999. www.dlink.com

HP Announces Eight-Port Switch

Hewlett-Packard Co. last week introduced the HP ProCurve Switch 408, an eight-port switch that provides autosensing 10M bit/sec. Ethernet or 100M bit/sec. Fast Ethernet connectivity for small networks.

An LED display lets administrators view the network traffic and status of each port, according to the Palo Alto, Calif., company.

The switch costs \$399. www.hp.com

Aladdin Adds Internet Security

Aladdin Knowledge Systems Inc. is shipping eSafe Protect Gateway 2.1, software for gateway-level Internet content security.

The product is a firewall protection plug-in that integrates anti-vandal and antivirus protection with

Web address filtering, spam blocking, cookie blocking and keyword-based blocking, according to the Seattle company.

Pricing ranges from \$2,600 to \$9,000. www.aks.com

Lucent Unveils Firewall Server

Lucent Technologies Inc. has announced Managed Firewall and Security Management Server,

software for integrated firewall, virtual private network and intrusion-detection security management.

According to the Murray Hill, N.J., company, the software helps administrators integrate and centrally manage up to 500 Lucent

Managed Firewall Bricks. It also offers central management of antivirus security. Fail-over and load balancing are supported.

Pricing for the software begins at less than \$15,000. www.lucent.com

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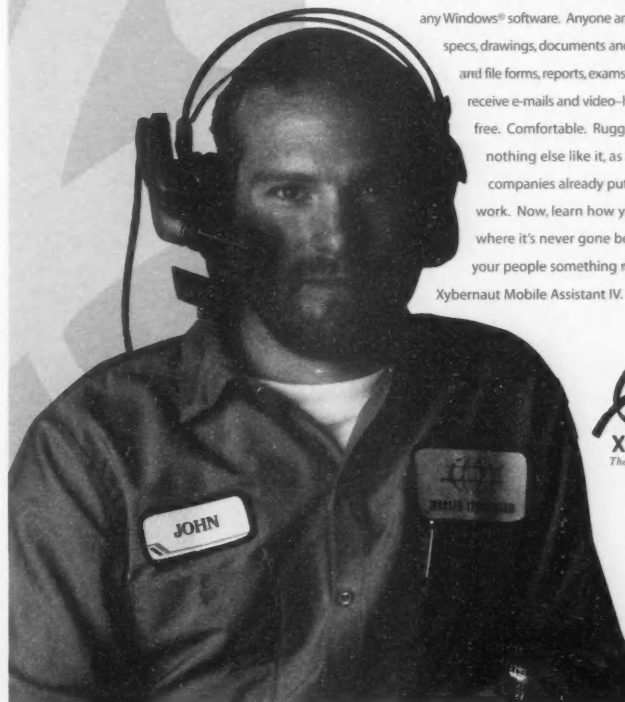
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Preview the Future Of E-Commerce

Making electronic software distribution practical, profitable, safe

BY RUSSELL KAY

E-COMMERCE HAS at best slightly automated the ordering process — at least as far as purchasing goes.

Most electronic purchases are made just like mail- or phone-order sales 10 or 20 years ago: A customer contacts the vendor, places an order and makes a payment via credit card; then a third party such as Federal Express Corp., the U.S. Postal Service or United Parcel Service of America Inc. physically delivers the merchandise.

Maybe that's the best e-commerce can ever do for clothes, appliances or hardware. But the market for physical goods is just the tip of the iceberg: sales of digital goods are reaching titanic proportions. Start-up Preview Systems Inc. may have the answer to safe, effective distribution of digital goods for both corporate and retail audiences.

The big problem: Effective e-commerce in digital goods requires distribution safeguards and standards. Preview offers tools for packaging digital content and safely distributing it electronically. Preview's technologies seem well on the way to becoming a global de facto standard that's being used by digital publishers and online resellers like Symantec Corp., Netscape Communications Corp., Sony Corp.'s marketing operation in Japan, Beyond.com Corp. and others.

Inception

Preview Systems got its start when two companies with complementary products, California-based Preview Software and Oregon-based Portland Software, began expanding into each other's turf. Reportedly, Microsoft Corp. suggested the two companies get together, and they merged last year to form Preview Systems.

The company's main product, ZipLock, comes as three

components. First, a persistent client, Vbox, packages digital products for secure electronic distribution. It provides security, marketing options and customer information while eliminating shipping, warehousing and packaging costs.

Customers have given Vbox rave reviews so far. International Microcomputer Software Inc., or IMSI (www.imsisoft.com), used it to add an online try-before-you-buy option to its NetAccelerator prod-

uct, John Tokar, IMSI's head of Internet business development, said he likes the way Vbox lets him include demonstration applications on the unused CD space of other products. "It gives us ways to sell in an alternate channel at no extra cost," he said.

The second component, ZipLock Server, offers real-time management of inventory, automates license and product fulfillment and tracks sales and customer data.



VINCENT PLUVINEAU, Preview Systems' president, says the goal is to deliver secure, flexible delivery of digital goods

Preview Systems Inc.

Location: 1601 S. De Anza Blvd., Suite 100, Cupertino, Calif. 95014

Telephone: (408) 873-3450

Web: www.previewsystems.com

Niche: Digital e-commerce and software distribution systems

Company officers:

- Vincent Pluvineau, president, CEO
- Frank Tysken, vice president and co-founder
- Cay Horstmann, vice president and CTO

Employees: 75

Burn money: Investors include Discovery Ventures, France Telecom Innovacom, Intel Corp., Sand Hill Financial and Telos Venture Partners.

Products: ZipLock 3.0: Consists of ZipLock Server (pricing as a percentage of electronic sales revenue generated \$50,000), ZipLock Gateway (\$3,500) and Vbox (free).

Potential stumbling blocks:

- Rapid response. The Web moves so fast that Preview's head start could vanish in months or minutes.
- Bandwidth dependency. If phone and cable companies fail to deliver wide-band data pipes to customers, digital delivery could falter.
- Tech-heavy staff. More than half of Preview's employees are engineers, but the company's real need is marketing expertise for digital publishers and content providers worldwide.

The third component, ZipLock Gateway, implements online fulfillment for multiple resellers on different e-commerce platforms. Both components use digital certificates and RSA Data Security Inc. public-key encryption. ZipLock guards against interruptions, enabling easy resumption of downloads at the break-off point.

A spin-off product, Preview Systems' Portable Store, contains many ZipLock features in a package that runs on a CD-ROM, DVD-ROM or even a dedicated hard drive.

ChargeNow.com, a division of Furph Inc. that helps customers package, distribute and sell software products, picked ZipLock because "Preview seemed to be the leader, and it offered the best technology out there," said Chief Technology Officer Larry Leszczynski. "We also looked at [Digital River Inc.], but we weren't really looking for a storefront; we needed a technology for doing the delivery. The combination of Vbox, which does trial enabling, plus ZipLock for delivery seems to be the only thing that addresses all the needs [of] software vendors."

The compelling strength of ZipLock 3.0, according to Bob Fraser, president and CEO of NetSales Inc., an e-commerce enabler in Overland Park, Kan., is that for the first time it brings electronic software delivery (ESD) to the traditional software distribution channel — large distributors, large resellers and chains and individual stores. "I believe it's the turning point for ESD," Fraser said. "Today, online resellers either don't do ESD, or they do it entirely on their own, or they use a bolt-on product like Digital River."

Preview's latest product, BetaQuest, provides software developers and publishers with quick testing feedback. An Internet-based service based on technology that Preview calls eBoomerang, it embeds an automated, Web-based feedback mechanism into an application. It also automates key administrative tasks and helps collect accurate behavior data. BetaQuest can help a publisher speed time to market, improve product quality and improve post-shipping support. ■

the buzz STATE OF THE MARKET

Fear of Praying

Customers are happy with ZipLock, but Preview still has important competition.

Worldview on Preview

Larry Leszczynski is chief technology officer at ChargeNow.com, a ZipLock service provider and division of Livonia, Mich.-based consulting/service provider Furph Inc.

"We're basically running a ZipLock ESD server that provides outsourced transaction processing and online delivery for mainly small to midsize software vendors who can't afford to purchase or operate their own ZipLock server," he said.

ChargeNow takes a small fee from every transaction, typically \$2.25 to \$3, depending on volume.

There's still a lot of resistance to e-commerce in the user community because of the privacy and security issues, according to Leszczynski. "We have to reach a certain level of consumer confidence — of connectivity — before online software delivery can really take off," he said.

A Multilayered Revolution

Bob Fraser, president and CEO of NetSales, an Overland Park, Kan., e-commerce enabler, calls Preview "pretty revolutionary technology."

The difference, according to Fraser, is that Preview allows multiple levels of distribution. The reseller can offer direct downloads from its site or link invisibly to a distributor's or manufacturer's site, seamlessly in the background and server to server.

Up a Digital River

Perhaps Preview's biggest commercial competitor, Digital River Inc. (www.digitalriver.com), offers another e-commerce service to smaller publishers.

Its front-to-back offering includes Web-store hosting, sales processing, product fulfillment (which includes both digital and physical delivery), around-the-clock customer support and a call center.

A prime difference between Digital River and Preview: To complete a transaction started on the publisher or reseller's site, the user must then transfer and connect with Digital River. Preview allows users to stay at the publisher's site. Necessary transactions are performed in the background, away from the user.

COMPUTERWORLD
emerging
companies

Cable Modems

BY MATT HAMLEN

WHETHER YOU want to surf the Web or support remote users, you may be looking at cable modems in the near future. These modems are external boxes that connect to your PC through your cable TV wiring and provide high-speed Internet access for telecommuters, branch offices and home users.

These devices theoretically provide downstream speeds — the amount of time it takes to download a file — as high as 35M bit/sec., but the actual speeds may only be 1.5M bit/sec., depending on the cable provider, analysts say. But users frustrated by today's 56K bit/sec. dial-up access over telephone lines would be excited even by that 1.5M bit/sec speed, which is 26 times what they get from dial-up.

The speed at which a message can be sent from a PC, known as the upstream speed, is usually much slower than downstream and is currently about 128K bit/sec.

However, analysts agree that cable modems have a competitive edge over the various Digital Subscriber Line (DSL) services that are being promoted by the phone companies. DSL also offers high-speed Internet access, but uses existing copper phone lines.

Still, analysts say cable modems and DSL are so fast that they aren't concerned that upstream speeds are slower

than downstream speeds.

"Some business customers buy whatever is the first thing available if it's faster," says analyst Paula Reinman at Tele-choice Inc. in Boston. Small and midsize business users "are so thirsty for high-speed access, and they don't have many choices."

Cable operators are "bullish on extending their services to businesses but have a way to go" to offer service in all U.S. markets, says Leslie Ellis, an analyst at Paul Kagan Associates in Denver.

That's because cable TV lines mainly pass through residential neighborhoods, not office parks or downtown areas, which means a business might need to negotiate the cost of running TV cable to its building, analysts warn.

Also, cable companies built their television networks based on winning a single-territory franchise in an area, so customers may have only one choice for a cable provider, analysts say.

Whether you go for a cable modem or DSL, pricing often

runs \$40 per month, with a one-time setup fee of \$300 for a modem offering downstream speeds of 1.5M bit/sec., says Jay Pultz, an analyst at Gartner Group Inc. in Stamford, Conn.

Cable networks are shared, meaning up to 500 homes could be placed on a single node. However, cable providers say that sharing doesn't degrade speeds because of the bursting nature of Internet access.

Because the networks are shared, several analysts say there's a security problem with

cable modems, but improvements for cable modem access are on the horizon, and security shouldn't be a concern by year's end.

But it will take another 18 months for DSL and cable modems to become viable alternatives to dial-up access running at 56K bit/sec. for many business applications, especially remote and branch offices and telecommuters, Pultz predicts.

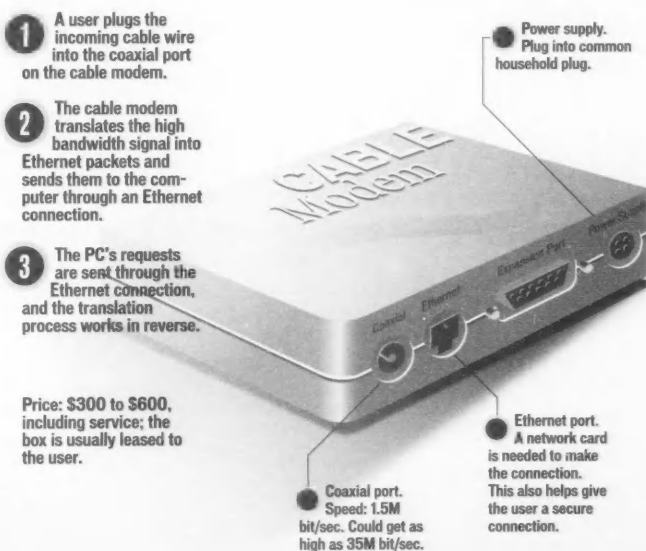
The @Work division of Cox Communications Inc. in Redwood City, Calif., has been setting up high-speed Internet access for the past year and estimates it has about 1,000 business customers in the U.S., says Vice President Don Hutchison. @Work provides DSL or cable service that offers five business users in a small office high-speed access for \$250 per month.

AT&T Corp., a traditional phone carrier, has become the biggest cable TV provider nationwide with recent cable provider purchases totaling \$100 billion. ▀

DEFINITION

Cable modems are devices used to transfer data over cable TV lines. These types of lines, called coaxial cable, provide much greater bandwidth than traditional telephone lines. The modem box is connected to the cable and then to a PC for fast Internet access.

How It Works:



Price: \$300 to \$600, including service; the box is usually leased to the user.

JUST THE FACTS

Subscribers in North America

Cable modem and DSL users are projected to increase more than tenfold:

Cable Modem	
1998	500,000
2002*	7,300,000
Digital Subscriber Line	
1998	50,000
2002*	2,600,000

*Projected

SOURCE: PAUL KAGAN ASSOCIATES, DENVER

AT A GLANCE

Internet Access For Telecommuters

Home workers want faster Internet access. Here are some choices:

Dial-up modem	Up to 56K bit/sec.
Asynchronous Digital Subscriber Line	Up to 8M bit/sec. downstream and 386K bit/sec. upstream
Cable Network Modem	Up to 35M bit/sec. downstream (currently 1.5M bit/sec.) and 128K bit/sec. upstream

SOURCES: ADSL FORUM; CABLE MODEM ANALYSTS; MOTOROLA INC.

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

MOREONLINE

For more information about cable modems, visit our Web site.

www.computerworld.com/more

It's All in the Bag

When it's time to get your computer out of town, how are you going to lug it?

By Russell Kay

TODAY'S TRAVELING executive is constantly confronting transportation problems: late flights, car rental snafus and weather disruptions. But there's another important transport concern: how to carry the computer that links him to the home office and the Internet. I've carried computers in many types of cases, and frankly, I haven't yet found the right solution. Still, though none is perfect, there are lots of really good — even great — cases out there.

Go into any office-supply store and you'll see dozens of look-alike laptop carrying cases: They're black nylon and/or leather and have padded shoulder straps, protective spaces for the computer, organizer pockets and more. Often, the similarities are greater than the differences, which may be mostly cosmetic.

This review spotlights a few of the more innovative, out-of-the-ordinary pieces that you may not find in your local computer store or luggage shop. (Just don't forget to check those out, too.) People tend to choose a car based on how it fits both their needs and their personality. So it is with computer cases: personal preferences, work styles and physical characteristics are more important than any objective criteria or function descriptors in deciding what's right for you. In discussing these cases,

I try to both evaluate function and describe style. And because I think the automotive analogy is pretty telling, I also decided to compare each case to a specific car.

The Everyman Model

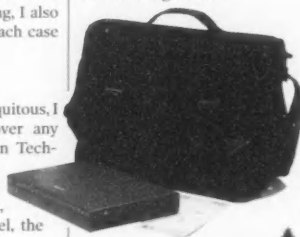
Because they're ubiquitous, I hadn't planned to cover any cases from Kensington Technology Group here until I saw an ad for the company's newest, most interesting model, the Triple Trek Expander.

The feature that really caught my eye was a water-bottle holder. I can't tell you how many times I've been called to board a plane with a barely opened bottle of soda and no place to put it. Capping the bottle and stuffing it inside my computer case has never seemed like a great idea, but what else to do? Kensington has the answer.

Unfortunately, this was also the flimsiest case I looked at. For \$100, I expect heavier-duty materials and more attention to detail: A newspaper pocket that's open on both sides seems more likely to lose its contents than store them safely.

The auto equivalent of the Expander is an older Plymouth minivan: affordable and roomy, if basic (though with cupholders) — but you want to look it over carefully.

Triple Trek Expander, \$100
Kensington Technology Group
Division of Acco Brands Inc.
www.kensington.com



More Here Than Meets the Eye

Domke bags were designed for fast access and equipment protection by a professional photographer. Unimpressive at first glance, the bags are made from perhaps the heaviest-weight cotton canvas you've ever handled. Straps are cotton webbing, hardware is low-tech but sturdy, and the package is light and comfortable. One

Computerworld editor has carried a Domke Reporter Satchel for four years, and though it looks lived-in, it won't be retired for a long time to come. Domke sent us two bags to look over: its Bureau Chief Satchel and the leather-trimmed Emerald Edition of the Reporter Satchel. Each has a variety of zippered pockets and compartments. Several optional padded inserts for photo gear will also slip into the main compartment. A simple backpack strap is an option.

What car is this? A simple, sturdy Volkswagen, of course. **Domke F802E Reporter Satchel, \$135**
F-806 Bureau Chief Satchel, \$135
The Saunders Group
www.saundersphoto.com

When Luxury Matters

Some people have to have a case that's just plain drop-dead beautiful and damn the expense, even when there's some compromise with function. If that sounds like you, consider the Three-Way Legacy Case from Levensenger.

This large, top-loading bag is made of thick cowhide with a soft, waxy finish and extra-heavy, solid-brass hardware. It wasn't designed specifically as a computer bag (though Levensenger carries other leather cases that were), so it has no special internal compartment or extra padding for a computer. The roomy interior will accept a lot, and the two handy grab handles, shoulder strap and hideaway backpack straps ac-



KENSINGTON'S TRIPLE TREK EXPANDER: metal bottle holder, but flimsy materials

WHAT DO YOU NEED?

In thinking about a case, consider how you travel and just how much you want to carry. If you always check your luggage, many of your computer peripherals can be relegated to your checked baggage. But if you're a quick-on, quick-off traveler, your computer bag is also your primary briefcase and has to hold everything you carry with you. So think carefully what you need. This checklist may help:

- Computer power-supply brick and cords
- Phone cords and duplex adapter
- PC card modem (and dongle)
- External mouse

- External floppy, Zip, and/or CD-ROM drive
- Emergency boot floppy
- Extra battery
- Small screwdriver
- Cell phone
- PDA or pocket organizer
- Portable printer
- Camera
- Lunch bag
- Water or soda bottle
- CDs, DVDs, floppy disks, Zip disks
- Business cards
- Files and documents
- Reading material

commodate any carrying style. I fear the lovely leather exterior will outlast the cloth lining, and I'd prefer a footed double bottom for added durability. But this is an elegant accessory that makes a powerful style statement. *Computerworld's* executive editor has carried one for a year and a half, and she's delighted with it.

This is a Jaguar: exquisite styling, luxurious and a pleasure to drive.

Three-Way Legacy Case, \$300
Levenger
www.levenger.com

Tenba Rates a 10

For good soft-case construction, the gold standard is set by Tenba Quality Cases Ltd., a small manufacturer in Brooklyn, N.Y. The Tenba Executive Traveler has a thin but highly protective (and awkward to open) laptop insert, about a zillion zippered compartments, including outside access for a cell phone. It has good detachable backpack straps (based on a model Tenba supplies to NATO), in addition to the shoulder strap and double carrying handles with attached umbrella straps. Plus, you can undo one zipper and increase the carrying capacity by two inches — handy for that return trip with excess literature, samples and souvenirs. This case comes in three sizes: the midsize, leather-trimmed 516B was nice but too big for my needs. If I were buying, I'd opt for the smaller size. And, hey, remember that gorgeous Levenger bag? The smaller Tenba comes in an all-leather model for \$380.

Tenba is the Mercedes Benz of cases: pricey, beautifully engineered and constructed, elegant in a solid and no-nonsense way.

Executive Traveler 516B, \$250
Tenba Quality Cases Ltd.
www.tenba.com

Hey, There's a Computer On Your Leg!

The Podeum Pro from Rach Inc. is very different. It looks a bit like the LapDog (shown at right), with the computer fastened to the middle of a wider piece of fabric. But instead of being filled with pockets and compartments, the side pieces are covered with Velcro fabric. You set the computer on one thigh, wrap the sides under

and around your leg and fasten them together. Then you work with the computer on your leg instead of your lap. The attachment is actually pretty solid. You can even walk with the computer still attached to your leg. Rach claims this poses little risk to the computer (the Velcro will support 60 pounds), but you'll get some strange looks.



Obviously, this case isn't for everyone, but some folks think it's great. Regularly \$95, the Podeum Pro currently is sold directly for \$50.

As a car, this is a Checker cab: funky, weird-looking and not especially comfortable. But it works almost anywhere.

Podeum Pro, \$50
Rach Inc.
www.podeum.com

In Your Lap, But No Dog

Some cases just hold your gear during transit, while others let you work out of them. Instead of giving you just an open briefcase, the LapDog from Shaun Jackson Design Inc. also gives you pockets and compartments for various peripheral gear and supplies.

On a table, your stuff is right there on either side. On a plane, the sides hang down beside your legs, while suede leather inserts keep the case on your lap and a rubber pad keeps the laptop from sliding. To pack up, just close the computer; fold the front, back and side panels over the top; and connect four quick fasteners

PORTER'S WHEELED WONDER

Once you've taken a hard look at what you'll carry, you have to make a fundamental decision: wheels or no wheels? For normal luggage, wheels are a no-brainer, but for a computer case, it's not so simple. Wheels take the load off your shoulders, which is great for travel, but they make the case more cumbersome at your destination and for normal, daily use.

If you opt for wheels, consider going whole hog and getting Porter Case's Computercase. This large, hard-sided unit — at 13 pounds, it's definitely luggage, not a shoulder bag — is one of the most rugged travel cases I've ever seen. It's just small enough to fit through the

airlines' new carry-on, security-check templates, and it has a unique, patented feature: The handle flips down, and the case becomes the base of an extremely large and stable luggage cart that will support up to 200 pounds of additional stuff. The Computercase is made of high-density molded ABS, with watertight aluminum seals and a combination lock.

If it were a car, it would be a Hummer: brawny, unbrokeable, unstoppable.
Computercase, \$399
Porter Case
www.portercase.com



and a Velcro strap.

Neat and fast, LapDog is a small package that's reasonably priced and well made. If you need a lot of stuff close by when you work, this may be your best solution. On the downside, it won't hold much else, so you'll probably need a second carry-on bag.

The LapDog is a compact sport-utility vehicle: slick, dependable, a little quirky with lots of function.

LapDog, \$140
Shaun Jackson Design Inc.
www.sjdesign.com

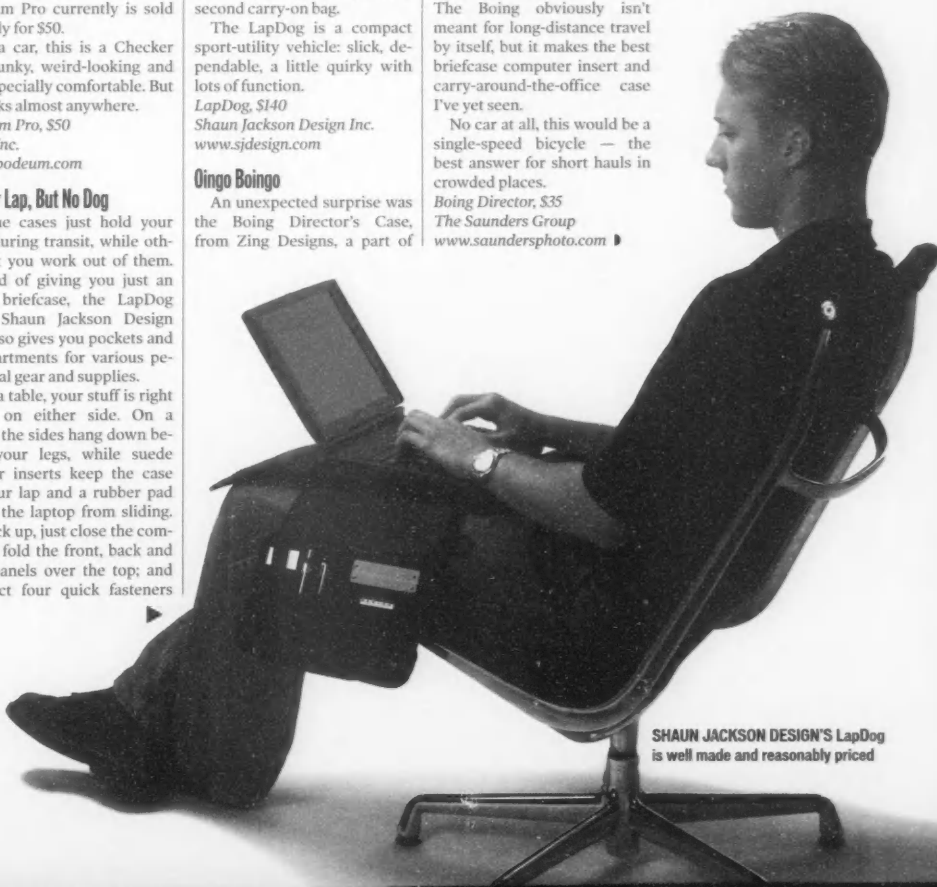
Oingo Boingo

An unexpected surprise was the Boing Director's Case, from Zing Designs, a part of

Saunders Group. The case, which was sent along with the Domke bag, is the simplest possible computer cover. Made of wet-suit-like neoprene, it has one main compartment, a zipper around three sides and two handles. No other hardware — nothing. The Boing obviously isn't meant for long-distance travel by itself, but it makes the best briefcase computer insert and carry-around-the-office case I've yet seen.

No car at all, this would be a single-speed bicycle — the best answer for short hauls in crowded places.

Boing Director, \$35
The Saunders Group
www.saundersphoto.com



SHAUN JACKSON DESIGN'S LapDog is well made and reasonably priced

COVER YOUR ASSETS



TO TRACK THE COMPANY'S hardware inventory, Pacificare Health Systems' principal network engineer Anthony Serabla, manager for desktop strategies Wayne Sals and senior principal network engineer Victor Chang (from left) opted to use Microsoft's Systems Management Server

A key to cutting total cost of ownership is to integrate tools, policies and procedures in a comprehensive asset-management plan.

BY DAVID ESSEX

TO LOWER your total cost of ownership (TCO), you first need a reliable way to identify and track information technology assets.

That appears obvious enough — but only in the past year or two have many companies started to seriously invest in formal asset-management programs, according to International Data Corp. (IDC) in Framingham, Mass.

Just 49% of 500 companies surveyed last year by IDC had asset-management practices in place, though 25% of the companies polled were in the planning stages. Another 27% weren't addressing the issue at all.

But the cry to bring order to IT inventories is being increasingly heeded. According to the survey, the percentage of companies practicing asset management soared from a paltry 8% in 1997. The slice of IT budgets spent on tracking assets increased from 6.4% to 8% in the same period.

Interviews with users, analysts and vendors show that asset management is no longer defined by a simple spreadsheet or database, a folder stuffed with invoices and a dusty, network-management program.

Now, the best-planned efforts combine clipboard-and-pencil inventories with a dedicated asset repository, "auto-

discovery" of assets on the network and remote software installation.

They also employ workflow tools that inform help desks and senior managers what assets they support, which ones are breaking down and why — and when they're due to be cycled out of service.

"Asset management really requires an organization to change the way it does business," says Joe Pucciarelli, an analyst at Gartner Group Inc. in Stamford, Conn.

Although IDC found that 45% of the companies surveyed built in-house applications, the trend is toward contracting with major hardware vendors, leasing companies, resellers and consultants. IBM, Compaq Computer Corp., Dell Computer Corp., Inacom

Corp., CompuCom Systems Inc. and many other equipment vendors all offer dedicated asset-management services.

Well-known network-management programs such as Hewlett-Packard Co.'s HP OpenView and Microsoft Corp.'s Systems Management Server (SMS) are typically just one part of a package that includes leasing (to more profitably manage system life cycles); an asset repository, centralized procurement (often handled by the help desk); and a reduction in the number of platforms and vendors.

Although demand for them has skyrocketed, even the best of the current asset-management products fall short of the challenge, according to industry analysts and the four users interviewed for this report.

Paramount among the problems is the lack of integration among high-level management and analysis tools, help desks, asset repositories and the assets themselves.

Despite efforts such as Desktop Management Interface and Simple Network Management Protocol to standardize the way assets identify themselves on the network, autodiscovery tools can neither be counted on to report existing assets nor to "know" when their configurations have changed.

Better Tools Needed

Ironically, the cost of asset-management efforts themselves will be hard to quantify without better financial tools that bring the total asset picture into focus. Pucciarelli says the current asset-management products are neither comprehensive nor integrated enough to capture all of an organization's IT costs and benefits.

But some users appear to be happy with the process improvements, reduced number of help desk calls and apparent customer satisfaction brought about by new asset procedures.

"We gauge our relative success by the number of complaints that we don't get," says Darwin Minehart, a senior vice president at Bank of America Corp. When asked to rate their progress in asset management, IDC survey respondents gave their only "D" grade to their asset strategy's ability to show a quantifiable reduction in TCO.

However, the same study reported that companies that practiced asset management reduced per-PC staffing costs by 15%, to an average of \$4,880 per year.

Pucciarelli says vendors are aware of the need for integration, and some are taking steps to address it.

Two of the leading repository vendors, Peregrine Systems Inc. and Main Control Inc., have been building links to help desks and better integrating their own internal modules.

Pucciarelli also cites Fortress Technologies Inc. and NetBalance Inc. as two up-and-comers in the nascent move to provide a comprehensive, analytical snapshot of assets. Fortress' Infrastructure Manager takes an enterprise resource planning approach, while NetBalance's IT Ledger emphasizes integrated data collection and financial reporting for executives (a browser-based version, CIO Portal, is scheduled for release in the third quarter, according to NetBalance officials).

Full integration will give rise to a new class of tools that employs data mining and analysis to exploit the enormous storehouse of asset data, Pucciarelli predicts.

By 2004, Pucciarelli says, such "data-driven IT portfolio management" will be the primary capital-budgeting methodology. "It's a question of taking the data and using it to make decisions," he says.

Cover Your Assets, page 94

Data-driven IT portfolio management [will be the primary capital-budgeting methodology]. It's a question of taking the data and using it to make decisions.

JOE PUCCIARELLI, ANALYST,
GARTNER GROUP

COVER YOUR ASSETS

For now, many companies would be happy just to get a reliable inventory of their IT assets. The following details how four organizations took the first step by investing in a formal asset-management program:

Continued from page 93

1 Better Billing
Organization: Bank of America Corp.'s Global Corporate & Investment Banking group in Chicago

A brokerage division of the banking giant, which merged with NationsBank Corp. last October. Its Global Derivatives Trading Group has about 725 employees.

Systems managed: Between 7,000 and 8,000 total devices and other assets, including 800 to 900 desktop PCs and some HP Unix workstations. The brokerage's standard PC applications include Microsoft Windows NT 4.0, Outlook and Office 97 and real-time securities trading software from Reuters Group PLC's Tibco Software subsidiary.

The Global Corporate & Investment Banking (GCIB) group's users are traders, software developers and operations, administrative and support personnel occupying four floors in Chicago's Sears Tower.

Asset-management solution: It went online last June with Peregrine Systems' AssetCenter,

which was recommended and installed by Technology Asset Management (TAM), a consulting group in Naperville, Ill. Seagate Technology Inc.'s WinLAN was also used for one-time autodiscovery of assets on the network. (It will be replaced with Tangram Enterprise Solutions Inc.'s Asset Insight to conform to other parts of GCIB.)

GCIB's technical operations department began to consider asset management in late 1997, when it realized it needed a reliable way to track IT assets billed to other divisions.

"I think we were probably 75% sure of what we were billing out," recalls Darwin Minehart (darwinm@crt.com), a senior vice president.

Although the group had been using Microsoft Access for inventory tracking, the existing procedure relied on two paper forms for deployment and purchase orders. "We did have a lot of complaints because, frankly, we lost a lot of requests," Minehart concedes.

By January 1998, cross-functional workgroups were under pressure to find a way to satisfy their diverse needs. "We recognized the need for a third party," Minehart recalls. "We had very little time to make the decision, and we didn't even know what all of the solutions on the market were."

TAM was called in to provide an objective analysis. It outlined a better process and selected four vendors to interview.

The equivalent of one and a half full-time employees are responsible for running the center, though about nine people use it off and on.

"The biggest selling point that AssetCenter provides is [that] it's got a workflow system built in to it," including a time stamp for each step in the approvals process, Minehart says.

AssetCenter makes it easier for users to request equipment, provides an up-to-the-minute view of the status of any request, smooths out process flows and produces expenditure reports that management can compare against the capital budget.

Minehart's group continues to hold weekly asset-management meetings with representatives from other departments.

Challenges: The new system faced cultural resistance, in part because it crossed more departmental boundaries than the old system. "A lot of people have had to change the way they've done things over the years," Minehart says.

Results achieved: "I think the user community is much happier with our performance than they were before," he says.

Future plans: A multithreaded version of AssetCenter, expected next year, will allow branching decisions in the workflow so that asset forms can be sent to just the relevant parties instead of everyone in the chain. Minehart also hopes to automate network information gathering.

2 Looking for Faster Software Deployment
Organization: Pacificare Health Systems Inc. in Cypress, Calif.

A managed care services company with about 9,500 employees in nine Western states and Guam.

Systems managed: Pacificare Health Systems (PHS) has roughly 10,500 desktop and laptop computers, 95% of them running Windows 95 and the rest Windows NT (45 are servers).

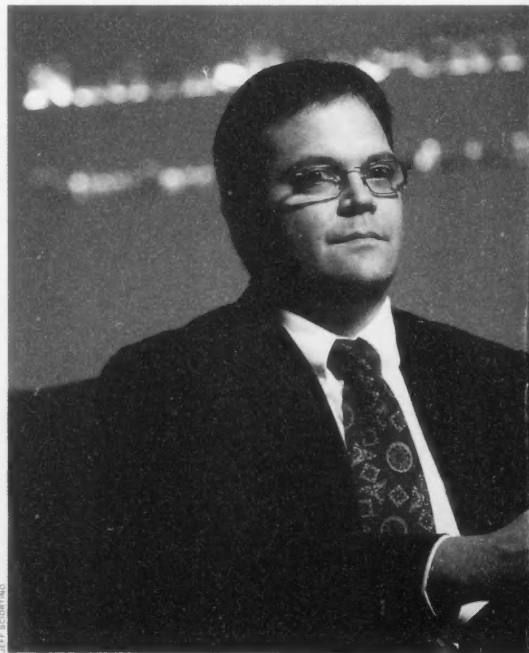
A 10/100 Base-T Ethernet WAN carries NT as the network operating system, except for a handful of older Digital Equipment Corp. Pathworks segments.

The standard desktop runs Microsoft Office 97, Adobe Systems Inc.'s Acrobat, Network Associates Inc.'s McAfee VirusScan and WRQ Inc.'s Reflection Suite for the Enterprise terminal-emulation software.

PHS uses Oracle Corp. and Microsoft SQL Server databases for customer-service and accounting databases; a custom Windows application handles sales and marketing management. Tivoli Systems Inc.'s Expert Adviser runs on the help desk, and the call center software is from Aspect Telecommunications.

Asset-management solution: The company uses SMS versions 1.2 and 2.0 to enter and track its

BANK OF AMERICA Senior Vice President Darwin Minehart:
 "The biggest selling point that [Peregrine Systems'] AssetCenter provides is [that] it's got a workflow system built in to it"



hardware inventory, which is leased from Comdisco Inc. A complete upgrade to SMS 2.0 was slated for completion by June 1. Pacificare uses Compaq's multivendor service offerings for asset administration and service; Compaq also performed the manual asset inventory.

Because manual inventories were costing \$30 per PC, "the cost of doing [it] really got to be unreasonable," says Wayne Sass, Pacificare's manager for desktop strategies. "We were spending way too much time and money manually deploying software."

PHS chose SMS primarily because as a Microsoft Select customer, it licenses BackOffice for every server and essentially gets SMS for free.

The first-pass installation had a 99.8% success rate that Sass says is unusual for roll-outs of SMS 1.2 — which have a reputation for being difficult to deploy.

He attributed the success rate to extensive planning and testing by a two-person team, the mostly stabilized hardware and software platform and the consistency in network interface cards — roughly 90% of which are from 3Com Corp.

Challenges: "It's hard to sell senior management on the val-

ue of asset tracking because you're spending a lot of money to set it up," says Marianne Stone, manager of service support.

Results achieved: Although his staff is too busy to do a formal analysis, proving the return on investment is a no-brainer, Sass says. After subtracting \$150,000 for the SMS deployment, he figures PHS saved \$200,000 in the first year by eliminating the annual, manual update of inventory.

Further savings come from reduced travel to the dozen or so PHS sites that lack IT personnel. "You can measure it by how much money it costs you at the end of a lease for money you can't find," Stone says. "What would have taken weeks or months in the past we can now do in minutes and hours," Sass says.

Future plans: Financial analysis of asset data would allow PHS to determine why, for example, one site pays more for equipment than another, Stone says. A plan is in the works to use SMS for electronic software distribution and to track software licenses, she adds.

3 Lease Tracking Organization: City of Fort Worth, Texas

About 5,400 employees in 25 departments spread among 140 locations.

Systems managed: About 3,000 PCs running a mix of Windows 95 and NT 4.0; there are 90 NT servers. The common desktop platform includes Office 97, VirusScan, Attachmate Corp.'s SNA gateway, Seagate Backup and Outlook and Exchange Server.

The city also runs roughly 20 client/server applications, among them a permitting system, risk-management software and point-of-sale systems in pro shops at five municipal golf courses.

An intranet, based on Microsoft Internet Information Server, is under construction. The city also runs Oracle 7.3x for its geographic information system and IBM DB/2 on an IBM 390 mainframe.

Asset-management solution: Fort Worth uses asset-management and leasing services from DellFinancial Services LP. Dell "stamps" each new PC with a disk image or standard soft-

ware configuration before delivering it.

"Out of the box, all of our systems look and act the same," says Michael DiPaolo, director of information systems and services. Central to the relationship is a Dell-maintained intranet site, called the Premiere page, that DiPaolo and staff can access to view a complete list of leased equipment.

Entex Information Services Inc. is now installing parts of Tivoli's TMEI0 software for the help desk, software distribution, general inventory and management. Additional modules for identification and inventory of PC components and remote control of its PCs will be installed in the fall.

Lease orders are still paper-based, with users getting forms from DiPaolo that his department later faxes to Dell Financial Services. That division authorizes Dell to prepare and ship systems to Dallas-based Data Applications Inc., with which the city also contracts for system upgrades. The city is reimbursed when its systems are sold on the aftermarket.

Identification numbers are burned into the new PCs' CMOS and printed on outside stickers. The IDs allow cross-referencing to any system's hardware and software configuration.

Challenges: None "except learning curves," DiPaolo says.

Results achieved: Based on preliminary cost estimates, "we think we're doing a lot of future cost avoidance," DiPaolo says. "The leases aren't costing more than it cost to buy previously. We think it's pretty much a break-even or a slight savings." He says sophisticated spreadsheets and the rollout of TMEI0 this summer will provide the necessary financial measurements.

Recaptured "soft" costs include less downtime because of a longer-term PC replacement cycle of 36 months.

Future plans: "We have to figure out how to integrate the information better and get away from paper-based processes," DiPaolo says.

4 Second Time Around Organization: CH2M Hill Inc. in Denver

An engineering consulting and design firm with 75 U.S. lo-

We think we're doing a lot of future cost avoidance. The leases aren't costing more than it cost to buy previously. We think it's pretty much a break-even or a slight savings.

MICHAEL DIPALO,
DIRECTOR OF IS AND SERVICES,
CITY OF FORT WORTH, TEXAS

cations, 20-plus overseas locations and about 8,000 employees.

Systems managed: About 4,900 PCs (mostly Compaq desktops and Toshiba America Inc. laptops) running Windows 95 or NT 4.0, as well as a smattering of Unix workstations.

The company will upgrade all of its PCs to NT 4.0, skipping Windows 98. Oracle is used for financials and general database needs; the company also uses Oracle's purchasing module. Autodesk Inc.'s AutoCAD and Bentley Systems Inc.'s MicroStation are the predominant computer-aided design programs.

About 300 servers run NT, which is also the network operating system.

Asset-management solution: CH2M Hill's leasing vendor, Inacom, will use AssetCenter to create an asset repository that will eventually be managed in-house by five regional coordinators. They will use SMS for autodiscovery of assets on the network (and later for software distribution).

For now, teams of Inacom employees are roving the company with clipboards, collecting inventory data.

The contract for the project, which is being coordinated with Microsoft Project soft-

ware, runs for about another year and half.

The project actually started more than three years ago, when Ken Brown (kbrown@ch2m.com), manager of IT networking and support, formed a process-improvement team that quickly turned its attention to asset management.

Senior management didn't follow the team's recommendations because the company's asset problems weren't obvious — even though "we truly did not know where everything was and what it was costing us," Brown says.

Comments from the company's external auditors eventually convinced management "that this was something we need to spend money on today," he recalls.

Inacom entered the picture six months ago when CH2M Hill selected it for the leasing contract, replacing GE Capital Services.

Brown says outsourcing was picked because of a lack of internal know-how about asset-management tools.

Challenges: In addition to the difficulty of proving the case for asset management, "we spent an enormous amount of time reconciling what our inventory showed and what Inacom's showed," Brown says.

Results achieved: The Inacom teams still have to populate the AssetCenter repository. Brown says he's confident that the combination of specially developed spreadsheets and AssetCenter's workflow will allow CH2M Hill's asset-management coordinators to evaluate the total financial picture at any time.

He says he also expects to quickly show reductions in inventory and leasing costs.

Brown raves about the efficiency of Inacom's inventory teams and AssetCenter's easy-to-use graphical interface. "We're a tough customer about evaluating projects because all we do is projects," he says.

Future plans: By early next year, Brown hopes to add non-IT assets — such as phone switches and engineering field equipment — to the repository. Eventually, corporate assets such as furniture may also be tracked. ■

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Ethernet Emerges

BY MARY BRANDEL

PERSONAL computers hadn't even hit the mass market when researchers started working on what would later prove to be the second phase of the PC revolution: linking these machines to a network. 1977 is widely seen as the year of the PC's big arrival, but Ethernet — the technology that today ties tens of millions of PCs into LANs — was invented four years earlier, in the spring of 1973.

The source of this foresight was Xerox Corp.'s Palo Alto Research Center (Perc). In 1972, Perc researchers were working on both a prototype of the Alto computer [Flashback, June 14] — a personal workstation with a graphical user interface — and a page-per-second laser printer. The plan was for all Perc employees to have computers and to connect all

of the computers to the laser printer.

The task of creating the network was assigned to Bob Metcalfe, an MIT graduate who had joined Xerox that year as the self-described "networking guy." As Metcalfe says, the two novel requirements of this network were that it had to be very fast to accommodate the laser printer and it had to connect hundreds of computers.

Metcalfe's previous experience as a student gave him a great head start in networking. "My Harvard Ph.D. dissertation, based on my research at MIT, was about the Arpanet and the Alohanet," which was a packet radio network at the University of Hawaii, he says.

By the end of 1972, Metcalfe and a number of other Perc researchers had completed an experimental 3M bit/sec. PC LAN. The following year, Metcalfe defined the general prin-

ciples of what he called Ethernet, the technology that made the first PC LAN possible. That same year marked the birth of the first Ethernet board, which you could place in a PC to create a network.

Ethernet defines the wires-and-chips aspects of PC networking as well as the software aspects of how data is transmitted. A key concept is its system of collision-detection and recovery, called CSMA/CD, or Carrier Sense Multiple Access with Collision Detect.

With this protocol, devices transmit only after finding the data channel clear. If two devices transmit simultaneously, causing a collision, they delay their retransmissions for a random length of time.

Metcalfe first called the network the "Alto Aloha Network." When he changed the name, he based it on the idea of "lumeniferous ether," the medium that scientists once thought carried electromagnetic waves through space.

Xerox produced hundreds of Ethernet boards that it used internally to access the lab's central minicomputer, access the Arpanet, send and receive e-mail, play games and share files, Metcalfe says.

It wasn't until 1979 that momentum gathered for Ethernet to become a widely agreed upon 10M bit/sec. commercial standard. At that point, Metcalfe had left Xerox and was meeting with Gordon Bell at Digital Equipment Corp. about helping Digital create its own LAN. Instead of coming up with something new, they decided to propose to Xerox that the two companies work together to make Ethernet a standard.

By June, Metcalfe had gotten Intel Corp., Digital and Xerox to agree to work on using Ethernet as the standard way of sending packets in a PC network. "Only then did it dawn on me that Ethernet would be a successful standard worth building a company around," Metcalfe says.

Thus 3Com Corp. was born. Now a \$5.4 billion company, 3Com introduced its first product, EtherLink — the first PC Ethernet network interface card, in 1982. Early 3Com customers included Trans-

America Corp. and the White House.

Ethernet gained popularity in 1983 and was soon named an international standard by the Institute of Electrical and Electronics Engineers Inc. But one major computer force did not get on board: IBM, which developed a very different LAN mechanism called Token Ring. Despite IBM's resistance, Ethernet went on to become the most widely installed technology for creating LANs. Today there's Fast Ethernet, which runs at 100M bit/sec., and Gigabit Ethernet, which promises 1G bit/sec. rates.

Looking back, Metcalfe says he would have used different methods to convince IBM of Ethernet's merits.

"I would have recruited major IBM customers to help me demand it from IBM," he says. "And it didn't help that I routinely attacked IBM as being a slow-moving monopoly — much as I now attack telephone companies and Microsoft — so I have not learned my lesson entirely." ■

Brandel is a frequent contributor to Computerworld. Contact her at brandel@cwix.com.

Technology Happenings

■ **Vinton Cerf** and **Robert Kahn** begin work on what will become the Transmission Control Protocol/Internet Protocol, or TCP/IP.

■ **The TV Typewriter**, designed by **Don Lancaster**, appears in the September issue of *Radio Electronics*. It makes it possible to display alphanumeric information on an ordinary television set.

■ **Thi T. Truong** at the French company **RE2** creates the **Micral**, the first commercial, nonkit PC based on a microprocessor — **Intel's 8008**. The computer costs less than \$2,000, but it's never successful in the U.S.

■ **Steve Wozniak** joins **Hewlett-Packard Co.**

■ **Frank T. Carey** becomes CEO of **IBM**.

■ **Scelbi Computer Consulting** creates the **Scelbi 8-H** kit computer using Intel's 8008.

■ **The University College of London** and **Royal Radar Establishment** in Norway become the first international Arpanet connections.

■ **John Atanasoff** wins a U.S. District Court decision recognizing him as the official inventor of the computer after a lengthy patent trial involving **Sperry Rand** and **Honeywell**. The judge rules that much of the technology in the **Eniac** came from the **Atanasoff-Berry Computer**, created by Atanasoff and his graduate student **Clifford Berry** at Iowa State in the late 1930s.

Other Notables

■ **The Supreme Court's** decision in **Roe v. Wade** legalizes abortion.

■ **For 70 days**, more than 200 members of the **American Indian Movement** occupy **Wounded Knee, S.D.**, site of an 1890 massacre of a band of Sioux people.

■ **The U.S. ends the draft** and creates a volunteer armed services.

■ **Elvis and Priscilla Presley's** divorce becomes final.

■ **Darold Knowles** of the **Oakland A's** pitches in all seven games of the **World Series** against the **New York Mets**.

■ **Best Picture:** *The Sting*.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.



BOB METCALFE based the name Ethernet on "lumeniferous ether," the medium once thought to carry electromagnetic waves through space

President Nixon is inaugurated. Thousands show up in Washington to protest U.S. involvement in Vietnam.

Pablo Picasso dies at 91.

Alexander P. Butterfield reveals to the Senate Water-gate Committee that Nixon had secret tapes of White House meetings. Nixon will refuse subpoenas to turn over the tapes until October.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

Former Nixon aides **G. Gordon Liddy** and **James W. McCord Jr.** are found guilty of Water-gate burglary and wiretapping.

The Organization of Petroleum Exporting Countries initiates an oil embargo, creating a worldwide energy crisis.



Gerald R. Ford, the house minority leader, is sworn in as vice president.

Connecticut Connectivity



CREATED: HARTFORD CONVENTION & VISITOR BUREAU

Creative solutions help companies cope with IT staffing shortages
By Jill Vitiello

THE FLINTY resolve shown by the University of Connecticut Huskies when they seized the NCAA men's basketball championship in March is evident in Connecticut's companies, which are rebounding from a stubborn recession. The state's information technology labor market is bouncing back, too.

In fact, the New Haven metropolitan area has the second-highest concentration of high-tech jobs in the country, right behind San Jose, according to Dynamic Resource Solutions, an economic consulting firm.

Between 1990 and 1996, the number of computer programmers in the state increased 131%. And programmers' average annual wages rose 46%, from \$43,872 to \$64,183, according to the state's Department of Labor and Community and Department of Economic Development.

"There's not much difference between New Haven, Hartford and Stamford. Everybody is trying to Internet-enable their applications for e-commerce. The hot skills are Java, HTML, C++ and Oracle," says Ray Turner, business unit vice president of IT at recruitment firm Source Services, a division of Tampa, Fla.-based Romac International Inc.

What does vary is how com-

panies in Connecticut's three largest cities are coping with the problem of having more IT jobs than qualified candidates to fill them, say recruiters and hiring managers.

Mirroring another national trend, students in Connecticut moved "away from computer and information sciences degrees over the last 10 years," says Steve Clement, director of projects and government affairs at the Connecticut Tech-

and CIO at St. Raphael Healthcare System in New Haven. He authorized "market adjustment" salary boosts and paid year 2000 retention bonuses rather than risk losing experienced employees.

One way Yablonka is closing the hospital's IT labor gap is by hiring nontechnical employees to fill positions known as "clinical analysts" — jobs that combine a sound medical background, administrative savvy and IT skills.

Yablonka hired nurses and other hospital staffers and gave them technical training. "They are bright people who know the organization and how things work. [But] it's not a total solution to bring people from the business units into IT," he says. His 90-member IT shop also has openings for desktop support positions in the Cisco Systems Inc. and Windows NT environments.

Yablonka says he "stokes the pipeline" of qualified candidates by working with community colleges, granting scholarships and building cooperative efforts between business and colleges to prepare students for the IT marketplace.

Hartford

To compensate for the lack of college graduates, companies offer their own training programs. Massachusetts Mutual Life Insurance Co. in Springfield, Mass., which has about 300 IT professionals in

Inc. and Web technologies.

One unusual source of IT talent is employees who choose to return to a former employer. At Travelers Property Casualty Corp. in Hartford, "rejoiners" are helping to fill more than 90 IT job openings in a 2,000-member shop. After a period of time, they may be eligible to have their previous years of service reinstated, says Miki Dickinson, vice president of staffing and development at Travelers. The firm identifies its hardest-to-find candidates as Visual Basic experts, Oracle database administrators and people with experience using the Cool:Gen application development system from Sterling Software Inc.

Travelers has an employee referral program that pays bounties of \$1,500 to \$3,000 for qualified IT candidates. In addition, Travelers' Leadership Development Program takes 20 promising graduates and puts them through rigorous training, rotating participants through various IT disciplines to groom technology-savvy future executives. Travelers also brings in scores of interns each summer.

Incentive programs and stock options help Travelers compete for the caliber of IT professional who otherwise might be lured by software development firms.

Stamford

One software development company that's growing fast is TSI International Software Ltd., located just northeast of Stamford. The company makes Mercator software, which integrates all major applications in an enterprise. TSI is looking to hire about 50 people, primarily systems analysts, to keep up with the enterprise application integration market, which is growing rapidly and placing huge demands on companies, says CEO Connie Galley.

Unconcerned about competition from other software developers, Galley says that "having lots of software companies here builds up awareness of the region and brings more people to the job market. Connecticut enjoys a well-educated population and a high quality of life, so it's an attractive place to work." ■

Vitiello is a freelance writer in East Brunswick, N.J.

New England's IT Outlook

Top skills hiring managers are looking for this year:

JOB TITLE	% OF HIRING MANAGERS
Project manager, systems and programming	53%
Network administrator analyst	47%
PC technical support specialist	65%
Senior systems analyst	35%
Programmer/analyst	41%

SOURCE: COMPUTERWORLD'S 1999 ANNUAL JOBS FORECAST SURVEY

nology Council. With so few candidates, companies must be creative to fill IT openings.

New Haven

"We worked aggressively with [human resources], which rewrote all our IT job descriptions and market-priced them against other industries in the area — not against other hospitals," says Eric Yablonka, vice president


of its Hartford office, conducts a 12-week programmer training course to ensure a steady pool of talent. It also established the Information Systems Organization Academy for high school and college students, which has a required curriculum of technical and professional development courses. The company has openings in Hartford for people with experience in Visual Basic, Sybase

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SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in TRITON, MANMANIX, ORACLE, C, UNIX, Windows 95 and Windows NT OS/2. **Requirements:** Bachelor's Degree in Computer Science or related field and three years experience as a Software Engineer or Computer Programmer, and knowledge of TRITON, MANMANIX, ORACLE, C, UNIX, Windows 95 and Windows NT OS/2. **Salary:** \$65,000 per year. **Working Conditions:** 8:00 A.M. to 5 P.M., 40 hours/week. Apply: Local Office Manager, Pittsburgh South Job Center, 2100 Wharton Street, Pittsburgh, PA 15203. Refer to job order number 8051475.

PROGRAMMER ANALYSTS (multiple openings) required for analysis, design, programming and testing of mainframe systems and Assembler programs. Three years experience required in the job duties described above. Employer will accept a Bachelor's degree as an alternative to 3 years of the required 3 years of experience. Must have proof of legal authority to work in the U.S. **Salary:** \$52,000-\$70,000/year commensurate with education/experience for a 40-hour work week. Interested applicants send resume to: Mrs. J. Gaston, Division of Employment Security, 13131 New Hall Ferry Rd., Florissant, MO 63033. Refer to Job Order #196726. Ad paid by an Equal Opportunity Employer.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Powerbuilder, Oracle and C. **Requirements:** Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer; knowledge of Powerbuilder, Oracle and C. **Salary:** \$57,000/year. **Working Conditions:** 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Ron Marsh, Alle-Kiski Job Center, 3 Kensington Square, New Kensington, PA 15056. Job No. 8051495.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Progress 7.3, Progress 4GL, UNIX and C. **Requirements:** Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer; knowledge of Progress 7.3, Progress 4GL, UNIX and C. **Salary:** \$57,000/year. **Working Conditions:** 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Tom Rusnak, Charters Job Center, 10 Paluso Drive, P.O. Box 210, Charters, PA 15022. Job No. 602569.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Oracle Forms 4.5, Oracle 7.3, Pro*C and PL/SQL. **Requirements:** Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer; knowledge of Oracle Forms 4.5, Oracle 7.3, Pro*C and PL/SQL. **Salary:** \$57,000/year. **Working Conditions:** 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. James Mackin, Pittsburgh North Job Center, 1122 Western Ave., Pittsburgh, PA 15233. Job No. 8051480.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Oracle Forms 4.5, Oracle 7.3, Pro*C and PL/SQL. **Salary:** \$57,000/year. **Working Conditions:** 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. James Mackin, Uniontown Job Center, 32 Iowa Street, Uniontown, PA 15401. Job No. 1025819.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Oracle Forms 4.5, Oracle 7.3, Pro*C and PL/SQL. **Requirements:** Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer; knowledge of Oracle Forms 4.5, Oracle 7.3, Pro*C and PL/SQL. **Salary:** \$57,000/year. **Working Conditions:** 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. James Mackin, Uniontown Job Center, 32 Iowa Street, Uniontown, PA 15401. Job No. 1025819.

Software Developer (Software Engineer): Resp. for design and development of enhancements to output management software products. Duties include providing engineering support to OEMs, partners, 3rd party software houses and customers; software development C/UNIX and Windows NT OS environments. Requires MS in CS, CE, or Systems Science, and three years experience in job offered or software engineering. Required experience to include UNIX Operating system and UNIX shell, Windows Operating system, and software development in C. **Salary:** \$63,094.00/yr. 40 hrs/wk. Apply at the Texas Workforce Commission, Austin, Texas, or send resume to 1117 Trinity Room 424, Austin, Texas 78701. JOM TX0408045. Ad paid by an Equal Opportunity Employer.

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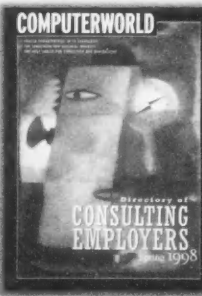


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Monday, November 15, 1999

Hotel Soffit
San Francisco Bay, California

Principal Analyst/Team Lead-Detroit, MI-Supervise team to design, test & implement info mgmt sys on UNIX & Windows-95 platforms using ORACLE & Designer 2000. Design logical models, model functions & process flow charts. Evaluate & process change requests. Provide uninterrupted technical support. M-F 8AM-5PM, 40 hrs/wk, \$80,000/yr. Req: Master in Comp. Sci. or Engr & 1 yr exp or Bach in Comp. Sci. or Engr & 1 yr exp or Bach in Comp. Sci., Math or Engr & 5 yrs exp. Send resumes to: MJC/ESA, PO Box 11170, Detroit, MI 48211-1170. Ref #217698 Employer Paid Ad.

Maintain existing proprietary Foxpro, Visual Foxpro, and Visual Basic applications using Foxpro, and d-base; responsible for writing original software for payer EDI interface; provide documentation required in conformity with procedures; assist in software development projects as requested. Work 40 hour week, M-F. One job available requiring a B.S. in Computer Science or related field \$52,000.00 per year. Must have proof of legal authority to work permanently in the U.S. SEND TWO COPIES EACH OF RESUME AND COVER LETTER to: Illinois Department of Employment Security, 401 South State Street, 7 North, Chicago, Illinois 60605. Attention: Joanne Breaux. Reference Job #V-L-19913-N.

Software Engineer II needed by Co. involved in Mfg Measurement Exptl & S/ware Analysis Tools to work at Newton, MA job location. Must have BS in Electrical Eng or equiv & 3 yrs relevant experience. Respond by resume to: Shayna Strauss, Mgr., HR Dept, AOE Corporation, 80 Wilson Way, Westwood, MA 02090-1806.

Technical Consultant wanted by Systems & S/ware Dsgn Automation Co. in Andover, MA for client locs throughout US. Must have Bach in Comp Sci, Elect Eng or related field and 3 yrs systems & software exp. exp. Respond by resume to: HR Dept, I-Logix, 3 Riverside Drive, Andover, MA 01810.

Andocs is a leading developer of software solutions for the telecommunications industry. More than 2,800 computer professionals serve our customers on five continents and in more than 10 languages. Now is a great time to talk with Andocs. We're growing. We're seeking team players with strong technical and personal skills for positions in our Illinois office: PROJECT MANAGER - Must have 5 yrs related exp & exp w/COBOL, C/C++, TCP/IP Sockets, & Perl. Please contact: Andocs, Inc., Attn: Amos Galon, 1610 Des Peres Road, Suite 170, St. Louis, MO 63131-1831, fax: 314-984-6076, jgalon@andocs.com.

COBOL II, CICS and DB2 Programming Specialist - assists in determining user requirements; writes business applications in COBOL II, CICS and DB2 languages in an IBM CICS MVS/ESA environment; prepares program test data, documentation and back-up and tests same; develops new subroutines or expands program. Must have documentable ability to program in COBOL II, CICS and DB2 languages for diverse business and technical applications. B.A. or B.S. in computer science or math and two years experience. Hours: Mon-Fri, 7:30 A.M.-5:30 P.M. Lowell, Ark. Salary: \$46,500.00, per experience. Apply to: Ark. Employ. Sec. Dept., 1626 S. 8 St. Rogers, AR 72756 or send resume to PO Box 2981, Little Rock, AR 72203, job order #959988, att: David Hayes.

Maintain existing proprietary Foxpro, Visual Foxpro, and Visual Basic applications using Foxpro, and d-base; responsible for writing original software for payer EDI interface; provide documentation required in conformity with procedures; assist in software development projects as requested. Work 40 hour week, M-F. One job available requiring a B.S. in Computer Science or related field and 1 yr experience. \$55,000.00 per year. Must have proof of legal authority to work permanently in the U.S. SEND TWO COPIES OF RESUME AND COVER LETTER to: Illinois Department of Employment Security, 401 South State Street, 7 North, Chicago, Illinois 60605. Attention: Joanne Breaux. Reference Job #V-L-19916-N.

COBOL II, CICS and DB2 Programming Specialist - assists in determining user requirements; writes business applications in COBOL II, CICS and DB2 languages in an IBM CICS MVS/ESA environment; prepares program test data, documentation and back-up and tests same; develops new subroutines or expands program. Must have documentable ability to program in COBOL II, CICS and DB2 languages for diverse business and technical applications. B.A. or B.S. in computer science or math and two years experience. Hours: Mon - Fri, 7:30 A.M.-5:30 P.M. Lowell, Ark. Salary: \$46,500.00, per experience. Apply to: Ark. Employ. Sec. Dept., 1626 S. 8 St. Rogers, AR 72756 or send resume to P.O. Box 2981, Little Rock, AR 72203, job order #959987, att: David Hayes.

Programmer Analyst - Indianapolis, IN-Analyze reqs, code, test & implement info mgmt sys using NATURAL/ADABAS. M-F, 8AM-5PM, 40 hrs/wk, \$60,000/yr. Req: 3 yrs exp. Send resume with SS# to: Indiana Dept. of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277, Attn: Mr. Gene Replogle, JO#8049385.

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We deliver innovative IT solutions to business clients nationwide. We have immediate full-time opportunities for Software Engineers with experience in the following skills: Unix, SQL, Cobol, Perl, Visual Basic, C/C++, ABAP/4, Oracle, CGI. Master's degree required. We accept the foreign educational equivalent of the degree, or the degree and cover letter to: Illinois Department of Employment Security, 401 South State Street, 7 North, Chicago, IL 60605. Attn: Sheila Lindsey. Reference# V-L-20673-L An Employer Paid Ad.

User Systems Developer/Analyst. Work Sheet 7:00 AM-3:45 PM 40 hrs/wk. \$65,000 P/A. Engineer, develop & streamline financial/accounting applications for retail, wholesale & fleet lease financial transactions of vehicle dealers and individual consumer leaseholders, & support corporate financial division's accounting group, using Visual Basic, COBOL II, & C/C++ languages. Sybase client-server and DB2 mainframe databases, in Windows PC-based operating system and/or mainframe MVS operating systems. Use Object Oriented Paradigm methodologies on Windows to develop financial/accounting applications. Use Windows Application Programming Interface (API) protocol & COBOL II socket interface programs to access data from DB2 directly from VB user interfaces. Maintain and provide support to VB interfaces, mentor other team members in object oriented development methodologies, and promote ISO 9000 standardization, quality working systems, procedures and working instructions, for software design, development and deployment. Master, Any Engineering or Computer Science and Engineering Discipline. Yr experience in job or Related Occupation of Computer Programmer/Analyst, 1 yr of Related Occupation. Must include development of financial/accounting applications for vehicle retail & fleet lease transactions in Windows & Visual Basic development platforms, which may be concurrent with Related Occupation exp. Employer Paid Ad. Send resume to MJC/ESA, P.O. Box 11170, Detroit, MI 48211-1170. Ref. #07199TKC

Applications Developer assigned as Senior Consultant to design and develop client-server and relational database applications, for full range of business systems, including internet applications with relational databases in UNIX and Windows environments utilizing internal protocols and conversion of multi-platform software applications from Legacy to relational systems utilizing SQL, HTML, and JCL languages. PowerBuilder, ERWin and SAS development tools and data modeling. Requires B.S. or equivalent degree in Computer Science, CIS, Engineering, or closely related field. Successful applicants must be able to perform duties on date of application and must be presently eligible for permanent employment in the U.S. Salary \$60,000-\$110,000.00 per year depending upon qualifications, plus benefit plan; 40 hour week with overtime as needed without additional compensation. Send resumes to: Ms. Allison Henley-Katrin, Grant Thornton, LLP, 500 Washington Avenue, Suite 1200 St. Louis, MO 63101

Systems Analyst, Cook County, IL and other client locations. Analyze, design, develop, enhance, modify, implement, test, debug applications against DB2 or VSAM databases using COBOL, C/P, CICS, IBM mainframe environment & productivity tools in an IBM mainframe environment and in AS 400. Req'd Bachelor's degree in Comp. Sc., Comp. Engg., Engg., Math plus 2 yrs in the job duties or in Computer software development (e.g. programmer, programmer analyst, systems analyst, software eng.) 2 yrs of the exp. must be with COBOL, C/P, CICS, DB2, and/or VSAM. IBM management and productivity tools. The exp. may be concurrent. M-F 9:00am to 5:00pm, 40hrs/wk \$57,500/yr. Must have proof of legal authority to work in the United States. NO CALLS - Send 2 copies of both resume and cover letter to: Illinois Department of Employment Security, 401 South State Street, 7 North, Chicago, IL 60605. Attn: Sheila Lindsey. Reference# V-L-20673-L An Employer Paid Ad.

For registration information call 1-800-488-9204

Software Engineer, Design, develop and administer a tier Oracle client/server-based applications and databases. Use reports such as Oracle Report Writer, Crystal Reports, ReportSmith, or PL/SQL. Work with database systems such as MS SQL Server, MS Access, Sybase SQL Server, or Oracle. Work on financial manufacturing, human resources, materials, resource planning processes and functions. Demonstrate ability designing and coding Microsoft Windows-based GUIs using VB, VB6 and Oracle Forms and reports. Demonstrate ability using ODBC, Ingress and stored procedures using database systems. Demonstrated ability in Database Administration using Oracle database on Unix platform such as Sun, HP, IBM, and SCO. \$65,832/yr. 40 hrs/wk. 9 a.m. - 5 p.m. Must have 2 yrs. exp. (or 2 yrs. Exp. rel. occu. of Development Manager and B.S. Comp. Sci. rel. field). Send 2 resumes. Case #1198136, PO Box 8968, Boston, MA 02114.

SAP Consultant to set up OM module, customization of entire OM modules, prepare project plan for implementation. Develop create SAP MAP's & data mapping for data integration from QLUSS system to SAP. Prepare business scripts for business process procedures, solving per implementation issues, customization of Management Information System: create system program using PL/SQL & develop quality assurance system; implement & use ERP software. Reqs. Masters in Mgmt. Info Systems, Comp. Info System, Bus. Admin. or Comp. Sci. or its foreign equiv. plus 2 yrs exp. in job offered or 3 yrs related exp. such as Mgr. Quality Assurance, Asst. Mgr. Quality Assurance, Related exp. must include computerization of management information system, creating system program using PL/SQL, and developing quality assurance system. \$64k. 40 hrs/wk. OT as exp. Send resume or CV to The Phila. Job Bank, 444 N. 3rd St., 3rd Fl., Phila. PA 19123. J.O. #8051277

Software Engineers to design, develop, test, implement, maintain and support software systems in the fields of image processing, image compression, graphical user interfaces (GUI) and database applications using object oriented analysis and design (OODA), C++, Visual C++, MFC under Windows NT, Windows 95 and UNIX operating systems using Open Database Connectivity (ODBC), perform third party software evaluation and integration and develop applications for production and GDI printing, develop digital image processing applications using color management; review quality for projects in an ISO 9000 certified SEI-CMM level 3 Quality Management System (QMS). Require Masters degree or its foreign equivalent in Computer Science, Computer Applications or related field with pre-employment in the job offered. 80% traveling required. Salary is negotiable. Send resume to: Winkatess Ramamurthy, Vice President, Coyne Enterprises, Inc., 3235 Satellite Blvd., Bldg. 400, Suite 300, Duluth, GA 30096.

Computer Support Specialist: Establish complete database & management system; use the C++ programming & design to develop software & computer programs, such as relational database & multi-user distributed processing equipment, assist in establishing and maintain a home page on World Wide Web to further company business; troubleshoot & maintain the computer systems; software trouble shooting and maintenance. Req. B.S. in Computer Science or equivalency with 2yr exp. in job offered in Computer engineering, programming or teaching. Candidate must be proficient in C/C++, database structural algorithms, sequential and parallel programming. 40hrs/wk, 8:00am-5:00pm, \$35,000/yr. J.O.#C3102 400 & D St. 1000 162-014. Interested applicants must send resume w/cover to the nearest Job Service office or Job Service 110 W. Main Street Chapel Hill/Carrboro, NC 27510.

SENIOR PROGRAMMER/ANALYST (location: Blythewood, SC) to analyze, design, develop, modify, test, document and maintain application software for the life insurance industry in a client/server environment using structural programming techniques, COBOL, JCL, TSO, ISPF, DB2, CICS and VSAM on mainframe operating systems; Devise or modify procedures to resolve data processing problems. Require: M.S. degree in Computer Science or a related field. Must have a demonstrated ability to perform the stated duties gained through academic coursework/previous work experience. Salary \$44,000/yr. M-F 8:15 a.m. to 5:15 p.m., 40 hrs/wk. Send 2 resumes to: Ms. Regina D. Ratteree, E&T Technical Services, SCSCS - 2000337, PO Box 1406, Columbia, SC 29202

Shw Eng'r, Design, develop, analyze, test, manufacture, modify for Enterprise Resource Planning software system w/ Mathematical calcula & methods w/ PowerBuilder 3.1, IBM PowerTool, Padlock as frontend & Ingres, Sybase 11, SQL Server 6.5 backend. Design user req & DB w/ Oracle 7.6 convert Mathematical techniques to comp programs w/ complex calcula such as Material Req't Plan, Sched'g, Allocation programs, MS in Comp. Sci. & 1 yr in offer or 2 yrs offer posth w/ exp in PB & Ingres. \$68K/yr. 40hr. 8-5, Baseline to Phila. Job Bank, 444 N. 3rd St., 3rd Fl., Phila. PA 19123. Re. Job #907630

Programmer Analyst needed by computer systems consulting co. in Palm Harbor, FL. Must have 2 yrs. exp. analyzing, designing, & developing program applications using IBM AS/400, OS/400, CL/400, SQL/400, Bachelors in Comp Sci., Eng., or Math required. Respond by resume to: HR Dept., Capital Data Consulting, PO Box 2248, Palm Harbor, FL 34682.

SYSTEMS/ANALYST (Blythe-wood, SC) to analyze user requirements, design, develop, test, implement, maintain and support application software for life insurance systems using COBOL, ISPF/TSO, JCL, VSAM CLISTS, IMS, DE/C, RDCS, ADR DB2, VSAM, and ASSEMBLER under mainframe and client/server environments. Require: B.S. degree in Computer Science or a closely related field with two years experience in the job offered. Salary: \$62,000/yr. M-F 8:30 a.m. to 5:30 p.m., 40 hrs/wk. Send 2 resumes to: Ms. Regina D. Ratteree, E&T Technical Services, SCSCS - 2000038, PO Box 1406, Columbia, SC 29202

Freeman & Co. LLC Financial Services Management Consultants Information System Design Consultant (ID-103) - Manage design in business administration, engineering or computer science with 1 yr experience in designing computerized processes and servicing the information needs for business decision. Knowledge of investment banking products and C++. Access and relational database design desired. Compensation is highly competitive. All inquiries will be held in strictest confidence. Applicants please quote ID and no phone calls. Send resume to: Ms. Gina Bascaly, Freeman & Co., 300 Floor, 1301 Avenue of the Americas, New York, NY 10019.

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FuGen, Inc.
6001 Monroe Road
Suite 640
Rockville, MD 20852
Attn: Dir. Human Resources

Computer Systems Analyst needed by Co. offering stand-alone, enterprise-wide, E-learn System to work at job loc in Graylake, IL. Must have BS or equiv in Comp Sci and 2 yrs exp in dev't and integration of systems and application s/ware. Respond by resume to: HR Dept., Categorical Software Corporation, 2445 Faber Place, Ste 102, Palo Alto, CA 94303.

SENIOR INTERNET ENGINEER Langhorne PA - leading edge internet & info tech firm seeks full-time senior internet engineer to perform: internet connectivity & network eng'g on Windows, Novell, Mac, Unix networks; NT & Unix server admin, firewall & internet access implementation; web prog in HTML, Java, C++ & Applescript; DB prog & admin. Req Masters in Computer Eng'g; US work auth. Competitive salary & benefit. Fax cv to Mike Andrus (215) 949-9087.

Manager/Technical Support & Dvlpm't needed by Research & Dvlpm't Co. in Boston, MA. Must have 2 yrs exp conducting research in TIPS & its application to dvp TIPS-oriented s/ware products. BS in Comp Sci or related field req'd. Respond by resume to: HR Dept., Invention Machine Corporation, 200 Portland St. Boston, MA 02114-1722

Network Engineer wanted by S/ware Dvlpm't & Network Integration Co. in Metuchen, NJ to work at client locs throughout the US. Must have Bachelors in Engg & 2 yrs network experience. Respond by resume to: HR Dept., NetCom Systems, Inc., 61 Pearl St. Metuchen, NJ 0884

Sr. Computer Consultants needed in Phil. PA area. Must have experience in planning, scheduling and directing preparation of s/w. Coordinate systems analysis and management; gathering requirements; review projects, documentation. Coding in C++, C, Sybase and Testing. Send your resumes to: Randi Gorpa, HR, Bluestone Consulting, 1000 Bridge Road, Mt. Laurel, NJ 08054.

Software Engineers (multiple openings) needed for NJ based IT company with openings in VA. Must be experienced in various technologies including UNIX, C, C++, Apply to Global Consultants, Inc., 601 Jefferson Rd., Parsippany, NJ 07054.

Software Engineer wanted by Mktg & Communications Co. in Morristown, NJ. Must have Masters in Comp Sci, Comp Engg or Elec Engg and 1 yr exp analyzing, dsng & dvpng comp s/ware using C/C++, ERWin and Rational Rose in Windows & UNIX envrnts. Respond to: HR Dept., DVC Interactive, Inc., 10 Park Ave., Morristown, NJ 07960

Database Administrator needed by Information Services Provider in Atlanta GA. Must have Bach or equiv in Comp Sci or Comp Engg and 5 yrs Oracle experience. Respond by resume to: HR Dept., National Data Corporation, National Data Plaza, Atlanta, GA 30329-2010.

Account Director (Software Systems) needed by Co. involved in Dvlpm't of Warehouse, Distribution & Transportation S/ware Systems for job loc in Shelton, CT. Must have Bachelors degree in Computer-related field or Business Administration and 5 yrs Managerial experience in software. Respond to: HR Dept., (S-4), McHugh Software International, Inc., 20700 Swenson Dr., Waukegan, WI 53186, Fax: 414/317-2638. E-mail: Recruiter@McHugh.com

Sr. Programmer Analyst needed by Comp Consulting/Systems, Dvlpm't Co. in Rochelle Park, NJ. Must have 1 yr exp customizing, enhancing, dvpng and debugging ABAP/4 prgms for SAP functional modules; installing & upgrading SAP systems and administering OS & RDBMS. Bach in Comp Sci, Math or Comp Engg req'd. Respond by resume to: John Cohen, Technical Recruiter, HR Dept., Matrix Information Consulting, Inc., 365 West Passaic St., Rochelle Park, NJ 07662

UNIX Administrator needed by Comp. Consulting Co. in Edison, NJ. Must have Masters degree and 2 yrs exp identifying, analyzing, dsng & impmtg setup of basic & extended IT infrastructure incl hw & s/ware for dvpng mission critical business applics; setting up & maintaining TCP-IP based n/works and setting up, configuring, upgrading & maintaining web servers for internet & intranet use using shell, perl, C, C++ & SQL. Respond by resume to: HR Dept., International Information Technology Team, Inc., 24 Campus Plaza, Edison, NJ 08837.

Database Administrator wanted F/T by Comp. Consulting Co. in Pittsburgh, PA. Must have 5 yrs exp dsng, dvpng, testing & impmtg DBase applics on dependent platforms using Oracle Database/Tools and Tandem & ERP applics using PeopleSoft; providing tech support as Lead Dvlp'r/Analyst & DBA to clients & end users using C, C++, PL/SQL, Pro*C & MS-DOS. Guardian 90, Unix, Novell, VAX-VMS, SUN, Win v3.1/95/NT Bachelors in Comp Sci, Math or Engg req'd. Masters + 3 yr exp also OK. Respond to: HR Dept., International Information Technology Team, Inc., 5737 Forbes Ave., Pittsburgh, PA 15217.

Anance Consulting seeks Senior SAP Consultants and Client Mgrs to perform and manage the technical processes associated with legacy to SAP R/3 data migration and interface projects. Consultants must have a Masters Degree in Engineering or Comp Sci. and be skilled in complex SAP R/3 implementations. Mgrs require a Bachelors degree and 2 years exp. Managing complex data migration projects using SAP data conversion tools. Send resume to Anance Consulting, Inc., 530 Swedesford Rd., #102, Wayne PA 19087. Attn: Barbara.

Software Engineer needed F/T by Comp. S/ware Consulting & Systems Co. in White Plains, NY. Must have 5 yrs exp analyzing, dsng & dvpng s/ware systems using Oracle 7.1, Sybase System 11, Visual C++, PL/SQL, CORBA, Transact SQL, PowerBuilder & SQL Forms. Bachelors in Comp Sci, Engg or Math req'd. (Will accept Masters deg + 3 yrs exp) Respond to: HR Dept., CyberSoft Group, Inc., 501 Main St., Ste 1000, White Plains, NY 10606.

Senior Performance Engineer, Wayne, PA, to research new and emerging technologies in software engineering and data warehousing. Requires experience in full life cycle development and project management, enterprise level data warehouse design and implementation, and Informix and Oracle. Competitive compensation package. Send resume to HR/CW, ACTA Technology Inc., 17 Algonquin Court, Wayne, PA 19087. EOE.

Softcom Systems, Inc. a Computer Consulting Co. in Piscataway, NJ is looking to fill the following positions:
i) **Software Engineer** - Must have Bachelors in Comp Sci, Math or Engg & 5 yrs exp analyzing, dsng & dvpng s/ware system using MS DOS 6.2, OS-400, RPF/400, CL/400, Novell Netware 4.0 & SQL Server platforms. (Will accept Masters + 3 yrs exp)
ii) **Programmer Analyst** - Must have Bachelors in Comp Sci, Math or Engg & 2 yrs exp analyzing, dsng & dvpng prgm applics using C, SQL, PL/SQL, Oracle 7, Sybase & PowerBuilder 5.0. Respond by resume to: HR Dept., Softcom Systems, Inc., 90 Redwood Rd., Piscataway, NJ 08854.

SAP Systems Analyst needed by Tire Mfr in New Haven, CT. Must have Bachelors or equiv in Bus. Admin or Info Systems and 1 yr experience in SAP configuration/prgrm. Respond to: HR Dept., Pirelli Tire LLC, 500 Sargent Drive, New Haven, CT 06536.

Systems Analyst needed by Abused Victim Services Co. in New York City. To investigate & recommend technological solutions & dvpng & impmtg solutions using Java, Oracle, Informix on Novell Netware, Windows, UNIX (Sun) and Citrix Winframe. Must have BS in Comp Sci & 4yrs exp or Masters +1yr exp. Respond to: Victim Services, Employee Relations & Staff Development, 2 Lafayette St., New York, NY 10007. EOE.

Software Engineer required by S/ware Systems Dvlpm't & Consulting Co. in Manh. Must have Masters in Comp Sci, Engg, Math or Science and 2 yrs exp analyzing, dsng, dvpng & impmtg C/S applic systems and dvpng/updating s/ware using C, Win 95/NT, UNIX, PowerBuilder, SQL, Sybase, dBase admin w/ ABAP & Derivatives ++. Respond to: HR Dept., Bitpower Solutions, 500 8th Ave., New York, NY 10018.

Network Engineer (LAN Administrator) needed F/T by Computer Telephony & Internet Systems Integrator in Manh. Must have MS in Control Systems Engineering, Electrical Engineering, or Computer Sci. Respond to: HR Dept., KALA Corporation, 200 Varick St., Ste 202, New York, NY 10014.

Programmer/Analyst wanted by Finance-Related Software Dvlpm't Co. in New York City. Must have Bachelors or equiv in any field and 3 mos exp creating, dvpng, dsng & modifying customized finance-based s/ware products using knowl of relational d/bases & object-oriented s/ware dvlpm't. Respond to: HR Dept., Essentium, Inc., 55 Broad St., New York, NY 10040.

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Senior Software Engineer to design and implement real-time object-oriented user interface (Man-Machine Interface) software under a multi-tasking operation platform in C++ and C to manage and develop cellular Base Transceiver Stations (BTS); locate and resolve Base Transceiver Station problems found in field deployed releases, including those in integrated microcontroller modules in real-time embedded applications; develop software with features for event logging and alarm management; develop and execute cellular tests in a lab environment; coordinate project management activities for modification on the Code Division Multiple Access (CDMA) IS-95 based BTS software subsystem; create opportunities for product and process improvements including efforts in support of quality methodologies such as ISO 9001 and SEI CMM (Software Engineering Institute Capability Maturity Model) qualification; manage software releases and feature modifications and provide project estimations and quotations on new project features. 40 hours, \$64,900/year. Master's degree in Electrical Engineering or Computer Science or Computer Engineering required as well as two years of experience as a Senior Software Engineer or two years of experience as a Research & Development Engineer and/or Software Designer and/or Project Engineer or any combination thereof. Experience required in: designing and implementing real-time object-oriented user interface (Man-Machine Interface) software under a multi-tasking operation platform in C++ and C; integrated microcontroller modules in real-time embedded applications; developing software with features for event logging and alarm management; quality methodologies such as ISO 9001 and SEI CMM (Software Engineering Institute Capability Maturity Model); and managing project releases and feature modifications and providing project estimations and quotations on new project features. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume and cover letter to Illinois Department of Employment Security, 401 S. State-7 North, Chicago, IL 60605. Attn: Joanne Breaux, Ref. #V-L-20563-N. No Calls. Employer paid ad.

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Team Leader sought to manage a team of 5-8 Programmers and Programmer/Analysts. Team will be responsible for developing and customizing software to meet client requests. Will oversee all team activities: assign work, develop project/work plans, monitor and report status to management, and take corrective action when necessary. Will be primary liaison with Client Services, working with them to see that appropriate functional specifications are developed to meet business requirements. Will conduct/participate in technical design sessions and/or develop technical specifications as needed. Will serve as a technical resource to team members. Responsible for moving developed software into Acceptance Test region and turning over for production when testing is completed. Bachelors or equivalent in Computer Science, Engineering or related field + 3 yrs/exp in job offered or 3 yrs/exp in application development in a mainframe environment. Such experience must include team management skills, and COBOL and JCL in an IBM/MSV environment. Applicant must be willing to travel to various client sites throughout the U.S. and commute with 60-mile radius of home. Hours: 40/wk. Salary: \$75,000/yr. Send 2 resumes to: Case #: 13895/660, PO Box #: 6999, Boston, MA 02114.

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Director, e-commerce: Advise on feasibility and profitability of electronic commerce functions being integrated into computerized maintenance management software and purchasing information systems. Design and develop functional specifications for electronic commerce software features. Analyze organizational management of maintenance and parts acquisition processes over the Internet. Develop inventory surplus disposal programs and systems. Develop and implement strategic marketing plans for electronic commerce initiative. Req: Bachelors degree in Political Science, Management Science or Industrial Engineering and two years experience in the position offered or two years of experience as an Electronic Commerce Specialist. M-F 8:00-5:00, \$82,500/yr. Job located in Greenville, South Carolina. Applicants should send two resumes and refer to Job Order Number SC2000936. Interested applicants should submit resumes to: Mr. Regina D. Ratterfoss, E&T Technical Services, SC2000936, P.O. Box 1406, Columbia, SC 29202.



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- RF System Engineer
- Systems Integration Engineer

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Senior Software Engineer (4 openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. One year of experience required using 1 of Group A and 3 of Group B OR 2 of A and 2 of B as follows: Group A - Oracle RDBMS, Designer 2000, Developer 2000, Oracle Applications - (Financials, Manufacturing - Order Entry & Inventory), Group B - Oracle Forms, Oracle Reports, SQL*Plus, Pro*C, PL/SQL, SQL*Forms, SQL* Reports. Work involves extensive travel and frequent relocation. Must have one year of experience as a senior software engineer or as a computer professional and a Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics or scientific or business related field. Will accept Bachelor's degree or foreign equivalent with five years of experience as a computer professional. Salary: \$75,000 per/yr. 40 hrs/wk. 9:00-5:00 p.m. Please submit resumes to: Mr. Duane M. Brentzler, Mgr. Greensburg Job Center, 599 Sells Ln., Greensburg, PA 15601. Job Order No. 7051410.

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Senior Software Engineer (4 openings): Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience in job offered or as a computer professional and one year of experience using 1 of Group A and 1 of Group B OR 1 of Group C OR 1 of A and 2 of B OR 1 of A and 2 of C as follows: Group A - Windows 3.1, Windows NT, Windows 95, Windows 98, Unix, HP-UX, IRIX, Sun OS, Group B - Visual C++, Visual C, C++, Visual Basic, PowerBuilder, Group C - JAVA, TCP/IP, HTML, MFC, CGI, PERL, ASP, COM/DCOM, ActiveX, MTS. Masters degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math or Physics. Will accept Bachelor's degree or foreign equivalent with five years of experience as a computer professional. Salary is \$75,000 per/yr. 40 hrs/wk. 9:00-5:00 pm. Please submit resumes to: Mr. Richard Intracasso, Manager, Beaver County Job Cntr., 120 Merchant Street, Ambler, PA 19003. Reference Job Order No. 9097652.

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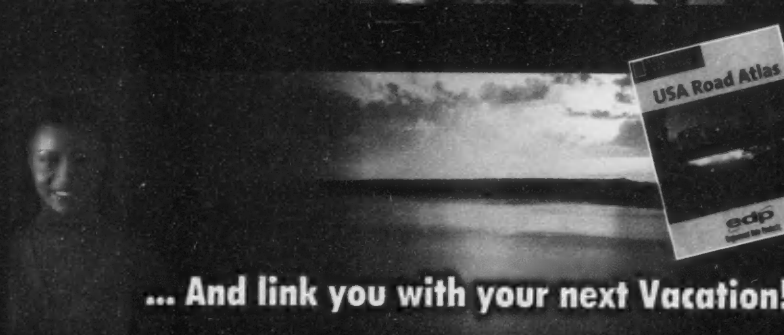
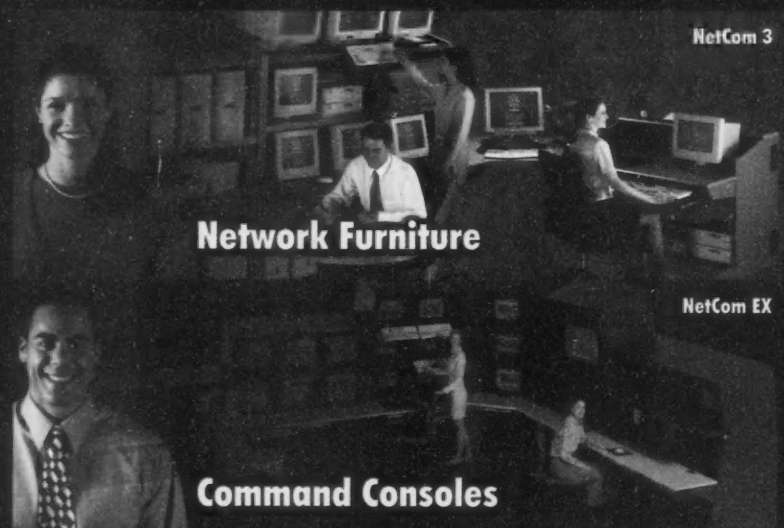
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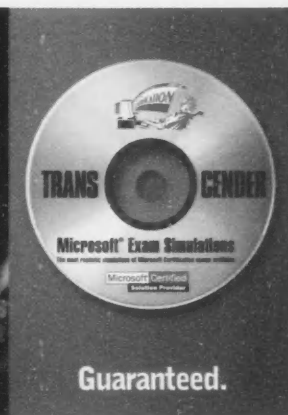
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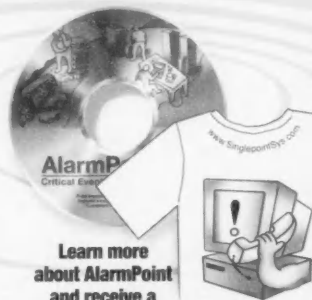
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Underlying Tech Key to E-Success

to angry customers.

EBay's woes underscore the crucial importance — and the enormous challenges — of ensuring uninterrupted service on the Web.

Schwab Acts

Charles Schwab, one of several online brokerages that temporarily went off-line earlier this year, said last week it hopes to almost completely eliminate downtime for traders by doubling the number of its mainframes to 20 and tying together the two Phoenix-area data centers that house them.

But it's expected to be early 2001 before Schwab can fully automate the links between the two data centers so that the processing of stock trades can be switched in an instant from one site to the other if problems arise.

"We're waiting for IBM to invent some new technology to pull that off," said Neal Goldstein, senior vice president of architecture and planning at San Francisco-based Schwab. What's needed are additions to the IBM software that controls connections among clusters of mainframes, he said.

Before the software is beefed up, Schwab would have to manually switch processing from one data center to the other, a process that "could take a couple hours," Goldstein said. But once everything is in place, he said, even a complete outage at one of the data centers should be "virtually unnoticeable to the users" of the company's Web site.

And because the two data centers are about 25 miles apart and are in different floodplains and power grids, the chances of both crashing at the same time are deemed remote.

David Floyer, an analyst at Boston-based Tcentrix Inc., said Schwab is spending "a lot of money, but it's almost certainly worth it. Downtime can be enormously costly for them." — Craig Stedman and Jaikumar Vijayan

"The Web exposes your performance issues for all the world to see," said Marshall Peterson, director of infrastructure technology at Celera Genomics in Rockville, Md. "Any extra money you spend on high availability is worth it when you consider the cost of not doing it."

What makes service reliability a challenge on the Web is unpredictable transaction loads and sudden traffic spikes, said Jonathan Eunice, an analyst at Illuminata Inc. in Nashua, N.H.

"If you're successful on the Web, as eBay has been, you can sometimes go from needing 1G byte of storage to 1T byte [a thousandfold increase] practically overnight," he said.

The need to constantly upgrade systems to keep up with growing traffic also means there's often little time for testing applications, software and hardware before they're thrown into service, Eunice added.

In eBay's case, the root of the most recent problem seems to have been its failure to install a software "patch" provided by its hardware supplier, Sun Microsystems Inc. Neither company would say exactly what the patch was supposed to do or the extent of its role in the outage.

Making the situation worse was the fact that eBay didn't have backup servers in place to take over the work of the crashed servers.

Downtime Costs

But as e-commerce sites mature — and user expectations grow — investing in reliability is going to be a fundamental need, said Fred Matteson, executive vice president and chief technologist at Charles Schwab & Co., which transacts more than \$10 billion in securities over the Web weekly (see story at left).

"It was fine to maintain 99% service availability levels in the early days," Matteson said. "But there's been this huge transformation on the Web... The notion that you can have dark windows on weekends" has gone away entirely, he said.

Celera, which provides genome sequencing information to pharmaceutical companies and universities around the world through the Web, is taking no chances when it comes to service availability. The main Unix servers for its Web site have been tied together in a cluster configuration, so that if one server goes down, the other automatically takes over. The company also has redundant power supplies, storage controllers and disks, dual feeds from main power grids and battery-powered generators capable of keeping service up for 15 days.

Pitching in to help similar

users are system vendors such as IBM, Hewlett-Packard Co., Compaq Computer Corp. and Sun, all of which have launched major high-availability initiatives in the past six months. Just last week, HP rolled out new uptime servers for Unix and Windows NT servers, including one that starts at \$750,000 and that guarantees service restoration in 10 minutes. Similarly, Compaq recently launched its Non-Stop E-Services plan, under which it will migrate technologies from its Himalaya Non-Stop servers to Unix, and eventually Windows NT, software and hardware. ▀

Crash Chronology

DATE	PROBLEM CITED	DOWNTIME
June 10	Defective server	22 hours
May 3	Server hardware failure; system board in database server	6 hours
May 20	Software problem; corrupted database	7 hours
Dec. 18, 1998	Hardware error; database server	3 hours
Dec. 7 and 9, 1998	Failed software upgrade; storage system	15 hours over the two days

SOURCE: COMPUTERWORLD RESEARCH

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Microsoft

In response, Microsoft is in the process of making several changes that will be unveiled, including the following:

- Aligning service and support by type of customer instead of by product. For instance, Microsoft recently created an Alliance Group for its enterprise customers with mission-critical applications.

- Redefining service delivery so enterprise customers will receive a wider array of services than a small business or an individual consumer, such as on-site support.

- Changing the way engineers are trained by adding more classes, along with mentoring and on-site, weeklong internships with large customers so engineers learn how businesses run and how they use the products.

- Increasing the number of worldwide support engineers from 7,500 to 9,000.

- Building a database and companion routing engine to log engineers and their specific competencies, so when someone needs help, they can be routed to a specialist.

- Teaming software designers with support engineers on customer calls so they will see firsthand what customers need.

Those moves follow earlier efforts to bolster service and support — both key areas of focus under Microsoft President

Steve Ballmer. For example, the company last summer pumped \$200 million into service and support initiatives, creating a new customer-oriented business division. Microsoft then went on to bring in more support personnel for

the call center, with many of the new people experienced in rolling out new products like Office 2000 and Windows 2000.

Geoffrey Moore, chairman of Chasm Group in San Mateo, Calif., said Microsoft is adapting to a new playing field.

"This is something new for Microsoft," Moore said. "They've been a high-volume vendor. ... They've fallen behind as they moved into the high-value market and people started to depend on them. Now, they don't have to be innovative or earth-shaking; they just need to step up to market expectations."

Steven Sommers, CIO at Hughes, Hubbard & Reed LLP, a New York-based international law firm, said he's counting on Ballmer's plan working.

"To be blind three years

from now to what I have to put up with today, that would be tremendous," Sommers said. "They're better than they were six months ago. They're friendlier anyway. ... But they bring on people who only know the new stuff, so how can they help me migrate from the old stuff? If Microsoft wants to carry over into the enterprise, they've got to be able to do that."

Microsoft will have a chance to test its new mettle in a few weeks.

Johnson said the company has about 2,800 enterprise-level customers in its Early Assistance Program for Windows 2000, which is generally considered to be Microsoft's most complex and largest undertaking ever.

When Release Candidate One of the Windows 2000 code ships, which is expected by early next month at the latest, those users can begin to make support requests. ▀



LAW FIRM CIO STEVEN SOMMERS wants help with migration



FRANK HAYES/FRANKLY SPEAKING

The real agenda

ANTITRUST EXEMPTIONS. Tax breaks. Foreign worker visas. That's the agenda IT vendors were lobbying for at last week's National Summit on High Technology in Washington — at least when they weren't congratulating themselves for raising productivity and saving the U.S. economy. Of course, users and corporate IT people weren't invited to the summit. Why should they be? They're not billionaires. They're just the people who actually put technology to work, making those economic miracles happen.

Hey, Washington, you want a *real* high-tech agenda? Try this one — eight policy changes that might not pull in big campaign contributions from IT executives but would make a real difference for the people turning IT's promise into business reality:

Let us write off obsolete IT equipment. Right now, tax laws say a PC or server takes five years to depreciate. That's insane. Today, a business PC is a lot more like a box of Post-It notes than like a corporate jet. Give us realistic time lines for depreciating IT equipment. Better still, for cheap hardware like a PC, let us expense it — write it off completely the year it's purchased.

Outlaw identity theft. Make it a federal crime to use misappropriated credit-card numbers, purloined passwords or stolen customer information. It's hard to believe, but ID theft isn't illegal in all states. Straighten out the tangle of local laws and put some teeth in the penalties — and you'll help consumers, businesses and IT shops.

Dump encryption export controls. The days when encryption was Spy-vs.-Spy stuff are gone. Today, we need strong encryption to keep data secure, and federal encryption export limits cripple U.S. companies that want to do business electronically across the globe. Get rid of 'em.

Strong-arm the Baby Bells into allowing local telecommunications competition. These ex-monopolies are using lawsuits and foot-dragging to keep out cable companies and other telecommunications providers. We need the increased bandwidth from that competition for telecommuters and e-commerce. Baby Bells love merg-

ers and acquisitions, so tell them — as you have other industries in the past — that they have to let competition in before their next merger is approved. That should get them off the dime.

Give us a road map for e-commerce taxes. Sure, we know we'll eventually have sales tax on e-commerce purchases. But right now, the electronic-tax moratorium seems to be revisited every time a congressman gets a letter from a cranky constituent. Give us a firm, fixed schedule we can count on.

Budget more DARPA communications research. The Defense Advanced Research Projects Agency (DARPA) gave us the Internet and the Global Positioning System. That's a good enough hit rate to justify giving DARPA a bigger piece of the defense-budget pie.

Simplify regulatory paperwork and make it electronic. You can't eliminate all regulations, but if federal agencies allow electronic filing — and use industry-standard data formats — it cuts the cost of compliance. Moreover, federal agencies should lean on their state counterparts to follow suit.

Make all education tax deductible. Sure, K-12 education is important, but what about everybody else? Right now, corporate IT workers can't deduct the cost of business courses, and non-IT people

can't deduct classes in technology. That's crazy. Education, *lifelong* education, is crucial to an information-based economy. ■

What's missing from this agenda? What federal laws or policy changes would give IT shops real leverage? Let Hayes, Computerworld's staff columnist, know at frank_hayes@computerworld.com.

Yo, Washington!
Try these
policy changes
on for size.



SHARK TANK

'E' AS IN EMBARRASSED

Around here, the big watercooler talk is auctioneer eBay's 22-hour megacrash (see story, page 1). Turns out it happened in part because eBay neglected to apply vendor-supplied patches and didn't have any backup servers. What next? Will eBay go down again when somebody kicks the plug out of the wall?

HEWLETT-PACKARD LED the charge in needing Sun — eBay's main server vendor — about the crash. Sharky hears HP execs were tripping over each other to tell reporters why the problem couldn't have happened on HP servers. And one HP type tried to steer media to a Gartner Group report that (he claimed) discusses other Sun storage problems.

EVEN RAPIDLY disintegrating Compaq piled on Sun, albeit more subtly. Compaq took a break from damage control to release a report showcasing its "availability leadership" with "impressive real-world customer data." Scott McNealy can sure dish it out. Hope he can take it.

STUNNING NUMBERS from a recent recruiting conference:

Technical recruiters said they look at 22 résumés for every position they fill and route nine of those résumés to hiring managers. You mean the résumés HR shows me are the cream of the crop? Shudder.

THE FLIP SIDE The May 31 Tank poked fun at a guy who, referring to a Y2K fix that would hold until 2036, said "no one will be running this program" by then. Well, that guy — call him Dick the Curmudgeon — reports that he knows his Y2K history perfectly well and that he told his colleague of the projected crash date: "On Feb. 5th, 2036, I will have witnessed the passage of 83 years, 9 months and 15 days. Precisely how much energy do you think I am going to muster caring whether our — and for that matter, any — program works?" Touché.

HP says June 21 is National IS Appreciation Day. Nah, Sharky wasn't invited to HP's lunch fest, either. Anyway, he'd rather munch on your tidbits about a vendor, boss or co-worker who's done you wrong. Your identity will remain supersecret, so pitch in: sharky@computerworld.com.

The 5th Wave



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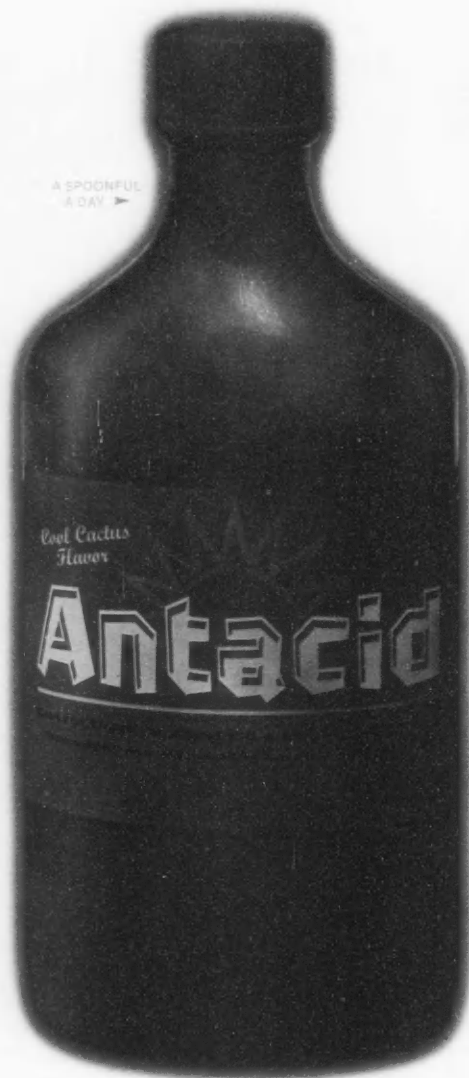


e-bandwidth.

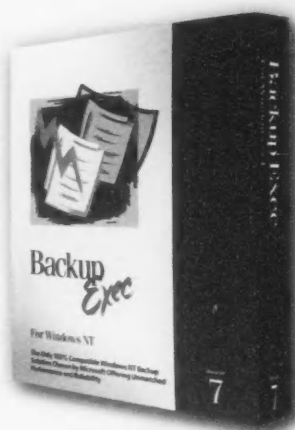
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